THE IRON AGE

New York, Thursday, July 22, 1909.

The Virginian Railway's Coal Handling Plant.

The Coal Shipping Terminal at Sewell's Point, Va.

At Sewell's Point, near Norfolk, Va., a pier has been built and equipped for transferring coal from the cars of the new Virginian Railway to vessels. The present pier is capable of handling 150,000 tons in 10 hr., or 4,500,000 tons per year of 300 working days, and eventually there will be four such piers, giving a capacity of 18,000,000 tons per year. The installation is somewhat unsual, occasioned by the fact that the cars which bring the coal to the seaboard from the West Virginia mines are to be utilized for taking other freight westward instead of returning empty. For this reason hopper-bottom cars were not as suitable as gondola cars. The latter are also considerably cheaper, and as the road expects eventually to have fully 5000 cars in service, the saving in the cost of cars will pay many times over the greater expense than was necessary to equip the pier for unloading gondola cars.

Fig. 1.—General View of the Virginian Railway's Coal Pier at Sewell's Point, Va.

The mechanical plant includes a hoist for raising the gondola cars up an incline to a car dumper, which bodily pours the coal into electrically operated hopper-bottom transfer cars. These are, in turn, hoisted up an incline, and then proceed under their own power to the stationary hoppers on the pier into which they are discharged, and from which the coal is loaded directly into the vessels. Fig. 1 shows a general view of the pier, which is 1860 ft. long from the shore line to the main harbor channel. It is of steel resting on concrete foundations.

In the first of the two operations, one car at a time is allowed to drift by gravity, to a point at the foot of the incline leading to the car dumper, where a mule hoist operated by a 150-hp. motor through a mule car picks it up and carries it to the dumper, as shown in Fig. 2. The drum for the mule car is mounted on a foundation adjacent to the car dumper beneath the incline approach track. The drum is provided with a friction clutch of Webster, Camp & Lane pattern and a band brake of large diameter, thus providing for the accurate control of the motion of the mule. The mule car is the Esselius patented car, and runs on a narrow gauge track between the rails of the standard car track. It is lowered into a pit at the bottom of the incline, so that the gondola cars may pass over it. Thereafter when the mule rope is operated the mule engages the back of the gondola car. The anchor of the haulage rope is backed by a heavy spring to relieve the shock at the starting of a load. After a car has been placed on the dumper the mule runs back down into its pit and stops automatically. The mule hoist and the Hulett car dumper, of which views are given in Figs. 3 and 4, were furnished by the Wellman-Seaver-Morgan Company, Cleveland, Ohio. In *The Iron Age* April 30, 1908, a Hulett dumper was described, which is generally similar in principle to the dumper here installed, except that it was of a movable type instead of being stationary. There are also some points different in the details of design.

When the car is in position on the dumper it is clamped automatically, and as the car is rolled over in the cradle of the machine the clamps prevent it from leaving the track. Uniform pressure of the clamps on the top of the car is maintained by counterweights, which are successively picked up as the dumping proceeds and the weight upon the clamps becomes greater. No adjustments are required for the various sizes of cars, and the clamps release entirely when the car is lowered again to upright position. The tipple hoist is operated by two 130-hp. motors. The dumper is capable of handling 30 cars per hour and any open type car, either gondola or hopper, up to 50 ft. long, 12 ft. high and 11 ft. wide, and of a total weight including the contents of not over 200,000 lb. The controllers for the motors are of Cutler-Hammer Mfg. Company's make. Automatic and electric devices prevent overtravel both up and down of the dumper cradle independently of the operator. No mechanical brakes are necessary in lowering the cradle of the dumper; an automatic controller takes care of this. The operating force includes one operator for the car dumper, two laborers to ride up with the load, and one to ride down with the empties and one helper. Fig. 3 shows the car partly tipped, and Fig. 4 the completely inverted position when it has entirely discharged its load. After each car is dumped it

is pushed off the dumper by bringing on the next loaded car, and the empty car is then run down the discharge track to the empty car storage.

One of the 10 transfer cars, each of 60 tons capacity, into which the gondolas are dumped is shown in Fig. 6. This is, as before stated, a hopper bottom electric car. The current is supplied from a double overhead trolley system through two special bow trolleys which are auto-

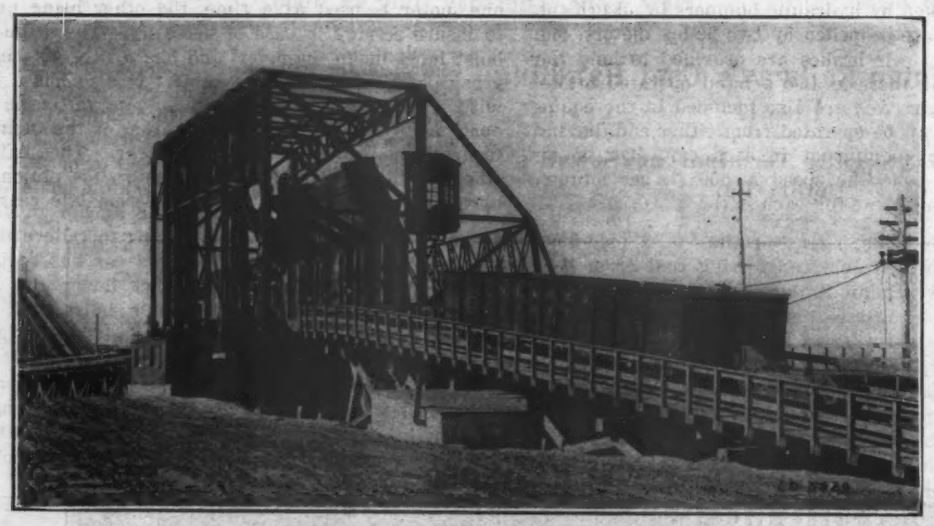

Fig. 2.—A Gondola Car Being Hauled Up to the Car Dumper.

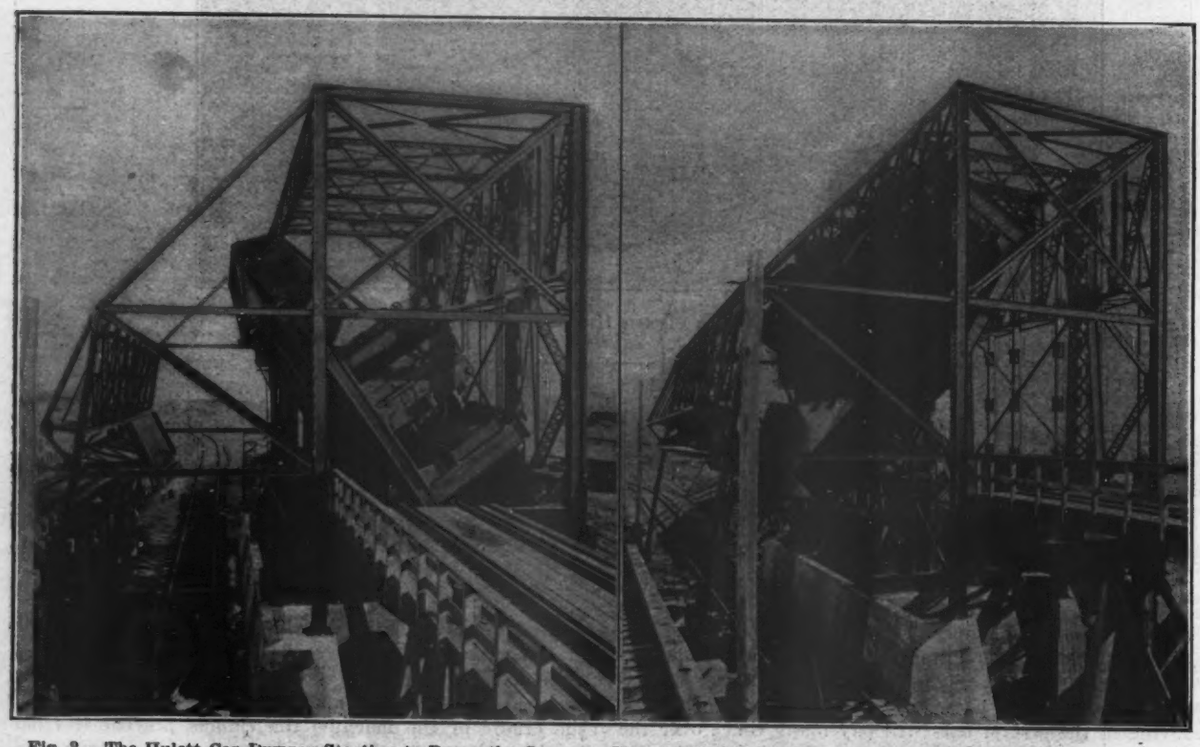

Fig. 3.—The Hulett Car Dumper Starting to Dump the Car.

Fig. 4.—The Completely Dumped Position of the Car Dumper.

Fig. 5.—The Hopper Bottom Transfer Car Being Hauled Up to the Trestle from Which It Is Dumped.

matically reversible. The doors are operated by compressed air furnished by a small air compressor similar to those used on street cars. In emergency the doors can be operated by hand. One-half of the car may be dumped at a time or the entire car at once. The door cylinders are backed by hydraulic bumpers to absorb the shock. The cars are propelled by two 90-hp. motors, one under each truck. Air brakes are provided to hold the cars on grade, and there is also a hand operated brake. Sand box, headlight, &c., are also included in the equipment. The cars can be operated from either end, having complete operating equipment in each cab. On an up grade of 1¼ per cent. the speed is 500 ft. per minute. One operator is sufficient for each car.

The Lidgerwood hoist which hauls the conveyor cars up the incline is shown in Fig. 7. Two motors operate this hoist, each of 500 hp., and built by the General Electric Company, Schenectady, N. Y. They are actually capable of developing individually 980 hp., so that only one motor is used at a time, the other being provided to insure reserve in case of necessity. The drum of the hoist is 84 in. in diameter and has a face 42½ in. wide grooved for a 1¼-in. main cable. It also has a section with a 7-in. face grooved for a ¾-in. tail rope which operates over a sheave at the bottom of the incline and insures the return of the barney car. The main gear wheel of the hoist is 160 in. diameter, the pinion which drives it is 19 in. diameter, the intermediate gear wheel

Fig. 6.—One of the 60-Ton Electric Hopper Bottom Transfer Cars.

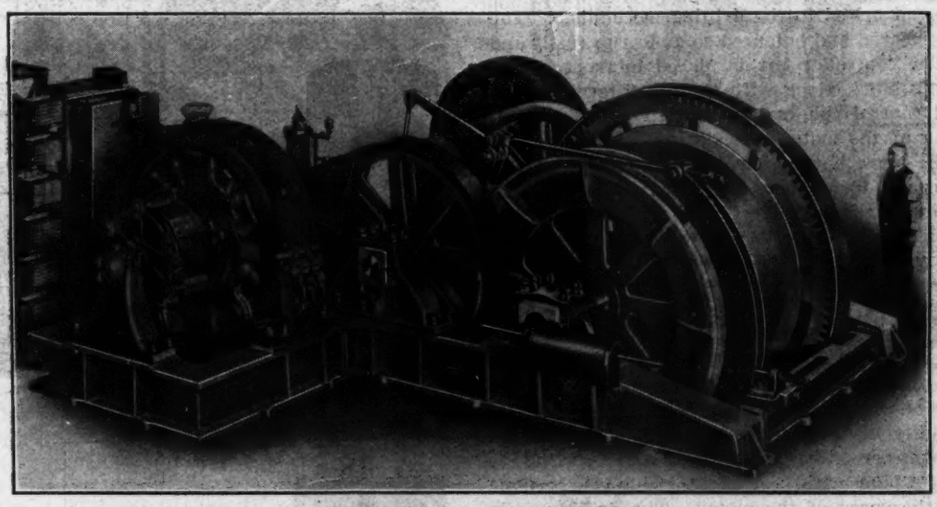

Fig. 7.—The Lidgerwood 1000-Hp. Hoist for the Transfer Cars.

After the cars have been loaded they are run to the foot of an incline, where they are taken up by a second mule or barney car as shown in Fig. 5, operated by a 1000-hp. electric hoist furnished by the Lidgerwood Mfg. Company, New York City. This barney car draws the electric car up a 25 per cent. incline at a speed of 480 ft. per minute. In 45 sec. this car is hoisted to the knuckle of the incline, and once on the higher level and past the knuckle proceeds down the pier under its own power. The big hoist then returns the barney car at a speed of 555 ft. per minute to the foot of the incline ready for another trip. The round trip is made in 1 min. 20 sec. The electric cars after being discharged are returned to the car dumper down an inclined trestle. The cars have special bolsters provided with a universal joint to allow the trucks to swivel so as to properly take a 25 per cent. grade vertically and sharp grades horizontally.

is 72 in. diameter with a 21-in. pinion. All of the gears are of cast steel with machine cut teeth. The drum has powerful post brakes controlled by a solenoid through the medium of compressed air. Compressed air is supplied at a pressure of 80 lb. by an electric compressor which forms part of the hoist outfit. The general operation of the hoist is controlled by an operator near the barney car pit 350 ft. distant from the hoist, but the hoist is provided with an emergency limit switch to make certain that it cannot overwind in either direction. The brake is set by a weight of 1400 lb. acting upon a lever. When the current is turned on the solenoid acts, and, by means of the compressed air, releases the brake. When the current is cut off, whether by intention or accident, the solenoid drops, releases the air, and the weight brings the brake into action, holding the load safe in any position.

An Electrically Driven Well Driller.

A portable blast hole drilling machine operated by an electric motor instead of boiler and engine has certain advantages. No licensed engineer is required, the power can be generated more economically, and where mounting a boiler on the machine is prohibitive it is easier to run electric wires than steam or air pipes.

The illustration shows an electrically driven machine built by the Keystone Driller Company, Beaver Falls, Pa., in use at the James & A. C. O'Laughlin quarry, at Belwood, Ill., near Chicago. It is equipped with a 10-hp. specially geared motor placed over the rear truck of

A Well Driller with Motor Drive Built by the Keystone Driller Company, Beaver Falls, Pa.

the machine and belted to the drilling mechanism. The latter is back geared and balanced so as to run easily and smoothly. The controller box is placed in front at the drill operator's hand, along with the other levers which regulate and control the various operations of drilling. The operating of the motor is easily understood by any ordinary drill man, but an electrician is necessary to lay feed wires and look after adjustments, &c. One man can easily handle the machine itself, except when sand pumping or moving the rig to a new hole. This is another saving on the cost of operating the steam machine, which requires the constant attention of a fireman, besides the driller.

At the full speed of the motor the drilling tools drop about 60 strokes per minute, which is ample in all cases to obtain the maximum drilling speed. As the hole becomes deeper or clogged with cuttings, before sand pumping, the rapidity of the stroke is gradually reduced to about 50 strokes per minute, in order that the cutting bit may deliver its blow with best effect. This can be done by reducing the speed of the motor. The drilling tools used comprise a stem, weighing about 1000 lb., drill bit of 150 lb. and rope socket of about 50 lb., or about 1200 lb. in all. The bit cuts a 5⅝-in. hole, and the stem is 3¾ in. in diameter and 22 ft. long. The stroke being from 30 to 36 in., a blow equal to about 3000 to 3500 ft.-lb. is obtained at each stroke. This is sufficient to cut a 5⅝-in. hole very rapidly through any formation.

Best results have been obtained in blast hole drilling with the 5⅝-in. hole. This size obviates the necessity of squibbing charges, which must be employed in the smaller holes. It is also more easily and cheaply drilled than a hole of larger or smaller diameter. The larger hole involves more cutting while permitting no corresponding advantage in size and weight of drill bar; the heaviest practicable tools can be operated in the 5⅝-in. hole. On the other hand, a smaller hole necessitates a reduction in the diameter and weight of the stem and bit, which detracts from their efficiency. It has been proved experimentally that a 6-in. hole can be drilled more quickly and cheaply than a 3-in. hole.

In tests at the O'Laughlin quarry 9 ft. was drilled in fairly hard limestone in one hour. In about four days four 66-ft. holes, 5⅝ in. in diameter, were drilled, and in a week four holes were drilled 105 ft. deep, the machine running 10 hr. a day. The record of a similar machine at Racine, Wis., in slightly harder rock was 900 ft. in 200 hr., including all stops and delays in moving the machine.

This machine is built with gear hoist, capacity 500 ft., or with friction hoist, capacity of 350 ft. The latter style is probably better for quarry and cut drilling, where the tools are being constantly raised and lowered, as in tamping in a charge. (One driller reported that he raised and lowered his tools 900 times in one day when tamping dynamite charges in four holes.) The holes will rarely run over 150 ft. deep. The machine is also made with traction attachment for self-propulsion, and, while it is impracticable to move it over great distances, on account of carrying along the electric feed wires for short moves from hole to hole, or from one side of the quarry to the other, it is a great advantage. The delay in waiting for a team of horses is saved as well as the expense. For short moves the self-braced derrick is left standing.

The Aurola Flaming Arc Lamp.

Adequate but economical artificial illumination in foundries, rolling mills and large shop buildings is a problem that electricity has greatly simplified, and more particularly since lamps of greater brilliancy and power were available for lighting large and high spaces. Traveling cranes, for instance, often make it necessary to place lamps at a hight of 30 ft. or more above the floor, so that strong sources of light are required. Dust and smoke, always present to a greater or less extent in rolling mills and foundries, also tend to obscure the rays of light. Under these conditions such a light as that

Fig. 1.

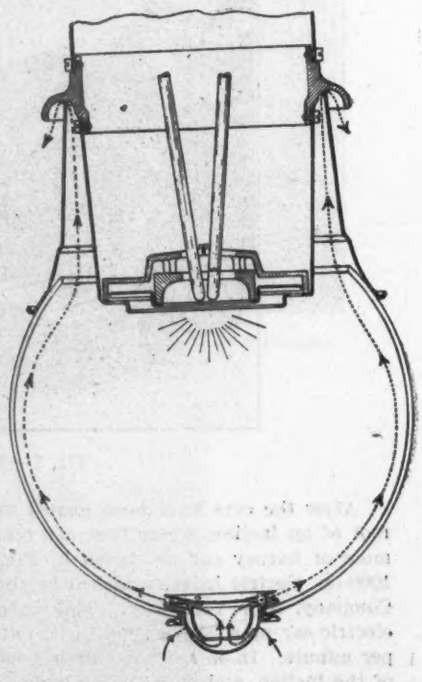

Fig. 2.

The Aurola Flaming Arc Lamp, Made by the Charles L. Klewert Company, Milwaukee, Wis.

emitted by the Aurola flaming arc lamp (Fig. 1), manufactured by Charles L. Klewert Company, Milwaukee, Wis., is claimed to be particularly effective. In addition to its great brilliancy, its rays are radiated under approximately 60 deg. from a horizontal plane, which per-

mits of adequate distribution even when suspended at a considerable hight above the floor.

This lamp is built for alternating and direct current and may be burned 2 in series on 110 volt or 4 in series on 220 volt circuits. An important feature of its design is the regulating mechanism, which is completely separated from the arc chamber, so that the products of combustion cannot interfere with its operation. In the direct current lamps the carbon feed is controlled by an anchor escapement which permits short feeding intervals, thus producing a very steady and regular arc. The induction motor principle is used in the alternating current lamps for the carbon feed control and, being very sensitive and exact, regulates gradually, thus insuring a steady even light. The Aurola lamps have both alternating and direct current switches which operate as soon as the carbons are exhausted, thereby affording complete protection to the lamp.

When burned in series of more than 4 direct current lamps are equipped with automatic switches which automatically re-establish the circuit the instant the lamp is extinguished, leaving the other lamps in the circuit undisturbed. Safety choking coils in parallel with each lamp perform the same function for the alternating current lamps when connected in series of more than 3. The standard amperage for both alternating and direct current Aurola lamps is 10 amp., the arc potential 46 volts, and the mean hemispherical candle power is 3000 for the yellow flame.

In the cross section, Fig. 2, the provision for proper ventilation of the globe is illustrated. The strong draft produced by the long sleeve carries off the metal oxides produced by the arc, the course of travel being indicated by the arrows. Direction of the draft is controlled by the ash tray in the bottom of the globe, which also serves to regulate the amount of air admitted for this purpose and to secure complete combustion of the carbons. The mechanism is protected from the weather by a steel-drawn hood which can be easily removed. The case is made of sheet steel braced by castings and is detachable from the lamp frame by eccentric catches. As a measure of safety, both the case and globe are equipped with chains to guard against dropping of these parts in case the catches should not be properly fastened. These lamps, it is stated, have been adopted by the National Tube Company for lighting its McKeesport mills.

Function of Fly Wheels in Connection with Electrically Operated Rolling Mills.*

After drawing attention to the particular importance of a suitable flywheel in connection with a motor driven rolling mill and defining its function, which is to take up the sudden shocks and equalize the unsteady loads, so that the cheapest, smallest and altogether most satisfactory and economical equipment may be installed, the author proceeds to show the characteristics of the load curve of a flywheel in connection with an induction motor. Torque curves for different flywheel effects and speed torque characteristics are shown from which the conclusion is that the greater the flywheel effect and the greater the slip for a given torque the better will be the equalization of loads.

For the flywheel to be effective in assisting to carry peak loads the motor must in that period be slowed down, and since the peaks in all rolling mill service vary from pass to pass, an automatic method of cutting resistance in and out of the secondary circuit of the motor to retard or accelerate the speed would be highly desirable, and the best equalizing effect and the highest combined efficiency and power factor would be obtained. Unfortunately actual conditions are such that an automatic control can seldom be installed. No automatic controlling device will work quickly enough to be effective at the time when it is needed, and it is generally found best to have a permanent resistance of the proper amount in the secondary circuit. For automatic control to be used to advantage the maximum peak load must endure long enough to allow the controlling devices to act. If the peak loads exceed a certain length of time, however, an equalization of loads may not be practicable. In this case the most economical operation would be obtained by running the motor with a small slip and a flywheel of sufficient capacity. As a general rule it appears that for peaks of 2 sec. or less duration or for peaks of 8 sec. or more duration, and also for extremely variable loads, a permanent resistance in the secondary circuit or a control operated by hand is most desirable.

The author explains that no accurate rule as to the proper kind of control and the size of the flywheel can be given. In each individual case all the possible load conditions should be taken into consideration to obtain the best equalization of loads, the highest efficiency, power factor, &c. Generally speaking, it is better to have a separate flywheel than to attempt to provide the necessary flywheel effect in the rotating parts of the motor, making it thereby unnecessarily large and often less efficient. The author compares a universal plate or rail mill motor operated with relatively small and relatively large flywheel effect, showing how much more uniform is the power factor, current and speed of the motor with the larger flywheel.

In general the author's conclusions are that the cheapest outfit is not always the most desirable, nor does it always give the lowest operating cost. The heavy flywheel is better as a rule, unless its one disadvantage, that it requires more time to start or stop or change over from one speed to another, precludes its use. With the exception of this disadvantage the greater flywheel effect is more economical. The motor can be smaller and even with the heavier additional flywheel the total cost for the complete outfit is generally lower than for a larger motor without the separate flywheel. The higher efficiency, the nearly uniform high power factor, and the lower average current make it possible to reduce the required capacity of the generating plant and the transmission system, and the higher combined efficiency means a lower operating cost. Another feature with the large flywheel to take up the heavy shocks is that the motor may be built with a smaller air gap, and for higher speed and geared, belted or roped to the mill shaft carrying the flywheel, thereby obtaining a still cheaper motor outfit. The author does not attempt to go into the subject in detail nor to work out any set of rules for determining what shall be the flywheel dimensions for any given service, but his analysis of the one or two examples chosen indicates the lines along which investigations may be made when installations are considered, and with a sufficient number of experiments it should be easy to arrive at the best proportion and sizes of parts.

* Abstract of a paper by H. C. Specht (Westinghouse Electric & Mfg. Company), presented before the American Institute of Electrical Engineers at Frontenac, N. Y., June 28, 1909.

Laying Concrete Under Water.

For the new Detroit River tunnel of the Michigan Central Railroad tremies are being employed to deposit the concrete under water. These tremies, operated from a barge carrying the concrete mixing plant, are riveted steel tubes, slightly longer than the deepest part of the river, and discharge the concrete directly into the forms. To exclude water while the first batch is being laid, two or three empty cement bags are stuffed into the top of the tube and the wet concrete is poured in, forcing the bags down and the water ahead of them, and by continually maintaining the tube full of concrete no river water can enter.

After the concrete begins to emerge from the lower end, the tube is kept several inches under the surface of the mass forming a seal. As the concrete builds up in the forms the tremie tubes are raised in the towers supporting them on the barge. A floater, consisting of a ball a foot in diameter and of slightly greater specific gravity than water, rises with the concrete and indicates through a wire to the operator on the scow when the tremie should be raised. The wet concrete distributes itself from the bottom of the tremie tube in a circle about 10 ft. in diameter.

The Prevention of Accidents in Foundries.

Report to the American Foundrymen's Association of a Special Committee, of which Thomas D. West was Chairman.

A great diversity of opinion exists on the cause of foundry accidents, which is but natural. The remedies suggested are varied from advice to keep a clear head during casting time to the prompt discharge of any operative who showed the slightest tendency toward a careless disposition. The replies received to inquiries further demonstrate the fact very clearly that few shop conditions are the same, and that, therefore, only general suggestions can be given, leaving each foundry to deal with the problem of the prevention of accidents specially.

An interesting point observed was that the fewer the employees the proportionally smaller the number of accidents. It would seem that greater attention is given the individual employee by his immediate superior than is the case where the shops are large and the conditions more complicated. This is further reflected in the seeming reluctance of managers of the larger establishments to take up seriously the deeper questions underlying the welfare of their employees, so far as freedom from accidents is concerned. They are without question usually too busy to get to that point. On the other hand, it may as well be admitted that there is greater need of respect for shop authority, attention on the part of the employees to their own safety and that of others, and discipline and observance of rules that may be prevailing.

There is a great diversity of opinion on the part of employers regarding action in cases of gross carelessness. Some are exceedingly strict, often letting go good men on general principle, and perhaps unjustly so. Then again others overlook too easily and reap an unexpected reward later in damage suits.

Suggestions for the Prevention of Foundry Accidents.

1. Weekly or monthly close inspection of all chains, slings, hooks and ladle bows, &c. This by competent persons, properly reporting to the office. An annual or semiannual annealing of chains.

2. Clean tools and an orderly arrangement of all shop appliances. The compelling of all employees to keep everything in its allotted place when not in use.

3. Well lighted shops. Especially on dark days and at night to have lights powerful enough to penetrate steam and dust, and yet give no sharp shadows on the floors.

4. The use wherever practicable of tramways to carry molten metal from the cupola to the floors. When this is not possible loose earth should be provided about the cupola spout, side tapping being preferable. (This because the greatest number of accidents by burns are said to occur there.)

5. Requiring carriers of molten metal to wear the proper kind of shoes to safeguard their feet. Providing goggles for the grinders to protect their eyes.

6. Prompt action in cases of gross carelessness, disobedience and taking chances by employees.

Injuries to the Feet and Needed Protection.

From the classification of bruises and burns contained in the reports the latter are credited as causing the greatest number of injuries, and some foundries in writing went to considerable length on the question of protecting the feet. On this point a large Eastern concern makes the following comments: "There is one thing which we think should always be insisted upon by every foundry manager, and that is this, that molders should always wear boots or shoes of the type which will readily shed drops of molten metal, which may spatter in pouring off. We have occasionally found some of our molders wearing laced shoes, and have always insisted that they should be more careful in this respect." A Western firm employing about 500 men states: "The majority of accidents were burnt feet. About a year ago we bought some good strong shoes and made the molders buy and put them on during the heat, and it reduced the number of burnt feet materially." A New York firm, under the head of "taking chances," reports accidents caused by molten iron getting into shoes having holes or laces, and says that its men were always cautioned by the foreman, and knew their liability to accident, but would not protect themselves. Again on this subject, a Southern concern makes the following suggestion: "You might recommend a leather cuff to buckle tight around a molder's leg above his shoe tops and under his pants to keep spattered iron out of his shoes. These cuffs should flare out at the bottom and extend below the lace. Burnt feet have given us more trouble than anything else."

It appears that this question of burning feet in foundries has been given a great deal of attention in

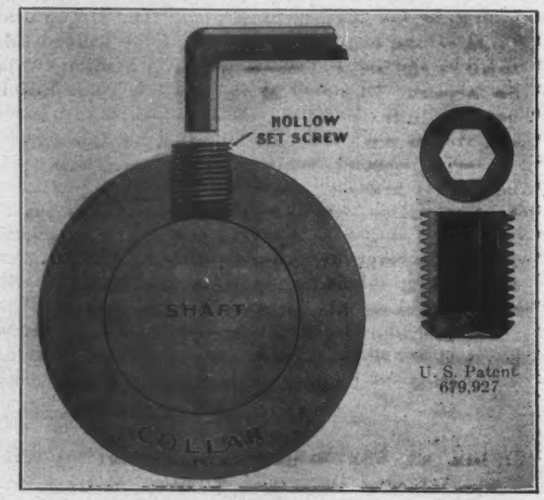

Fig. 1.—A Hollow Set Screw Which Solves the Dangerous Set Screw Problem.

Germany. One of its societies (as shown by a reprint in the *Foundry Trade Journal* of England) states that in collecting statistics 247 question sheets were received concerning as many cases of burns to the feet. Of the 247 cases 17 men wore shoes with elastic sides, 21 wore long boots, 9 wore wooden boots, 4 wore buckled boots, 10 wore wooden slippers, 145 wore laced boots and 41 wore low shoes. It will be seen that the laced and low shoes were the most dangerous.

Injuries to and Protection for the Eyes.

One Ohio firm having over 500 employees had in one year 140 persons who required a doctor to remove foreign material from the eyes. A Wisconsin company in reporting its accidents, says: "The greatest source of injury is damage to the eyes through flying chips. The company has provided goggles for the use of the men liable to such injury, but it is impossible to make the men use them." Another firm makes the same complaint, but in addition to recommending goggles, suggests the use of heavy cast iron shields, extending over emery wheels, and bolted to the stands in such a way that sufficient space is left for the operative to grind his castings and yet to absolutely protect him from flying pieces should a wheel break.

Safety Devices.

In taking up the question of safety devices, we feel called upon to repeat the statement of a very prominent

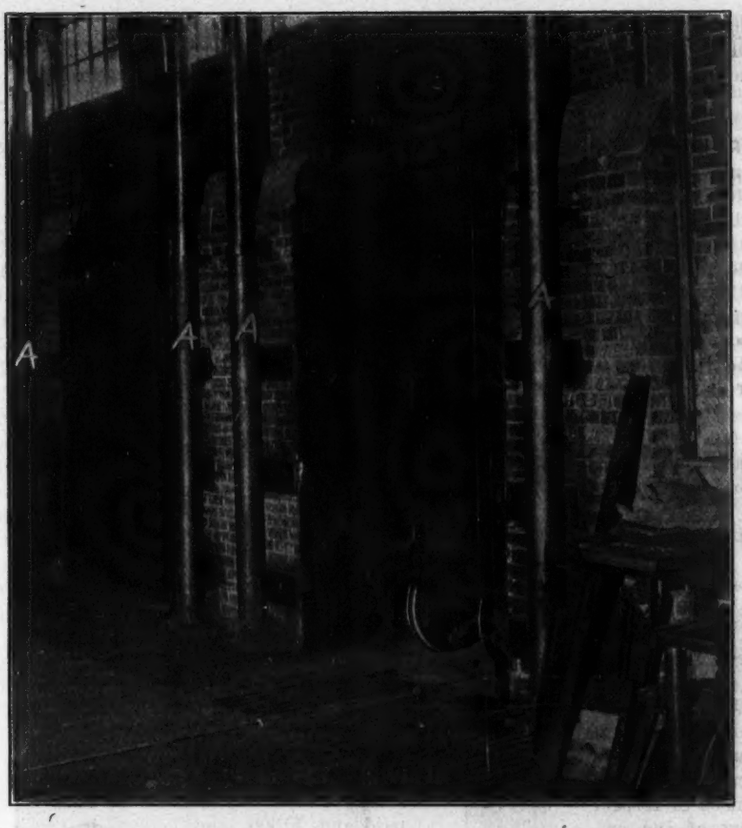

Fig. 2.—Brown & Sharpe Foundry.—Core Oven Doors Counterweighted in Tubes (A) to Prevent Falling Weights from Hitting a Workman.

New York editor, who writes us as follows: "I have undertaken an inquiry into this subject, based on one of the bulletins of the Census Bureau, and am surprised to find the small number of accidents that could by any possibility have been prevented by the use of safety appliances. In keeping with this, we have a large Philadelphia concern, noted for its modern appliances, which in referring to its foundry accidents, states: "The accidents in our foundry for the period mentioned were all such trifling burns, bruises and cuts as are likely to occur in foundry work. No safety appliance of which we have knowledge would have served to prevent any of the accidents." In the same line another firm states: "All the accidents were slight cuts or burns, and of a nature which no amount of safeguarding on the employer's part could prevent." Still further a large New York State concern says: "We have every suggested device we can think of, and exercise eternal vigilance besides; we need our men and we want to keep them safe." More along this line is given by a Pennsylvania concern, which states: "We always do everything that is possible to safeguard the lives of our employees, and we welcome any suggestion which will tend to reduce the accidents in our plant."

A large steel foundry in Pennsylvania remarks: "In addition to providing safety appliances, guards for dangerous places and keeping all apparatus and appliances in good order, an employer of labor can do much to prevent accidents by his personal efforts in training his superintendents and foremen to watch over the safety of the men under them, to the extent of instructing them in the safe use of their machines and appliances, cautioning them against taking unnecessary personal risks and in a kindly way calling their attention in the matter each time they are seen to do anything endangering their own or some other man's safety."

An Ohio firm says: "Within the last year we have done away with all protruding set screws on shafts, collars and pulleys, except where not practical, in which case the set screws are covered, making an accident impossible from this source. We have also covered tumbling mill gears and pinions with cast iron guards, although the chances of an accident here are very slight, on account of the gears running out and upward, or away from each other. However, the guards now make it absolutely impossible to have an accident." Fig. 1 shows the cut of a hollow set screw now required by law in some States. It solves the dangerous set screw problem.

The Brown & Sharpe Mfg. Company, Providence, R. I., in reporting on foundry accidents, writes as follows: "We have taken considerable pains in our foundry to reduce the chances of accidents to as low a point as possible, and we are sending you

Fig. 3.—Brown & Sharpe Foundry.—Method of Drawing Off Iron, the Large Ladle Resting on a Hydraulic Elevator.

under other cover five photographs which illustrate what we are doing in part in this line. One of these [Fig. 2] shows the doors of a core oven, which are counterweighted; these counterweights run in tubes [A], so that in case of accident should a weight fall it will not hit an operator. Another [Fig. 3] shows the large ladle in a pit, which allows us to draw off the iron into a smaller ladle, and turn it into the larger ladle to mix, while the larger ladle is resting on a hydraulic elevator, which can be raised or lowered so that as soon as we are through filling this ladle and take it away we close the hole and avoid the danger of a man's falling into it. In another [Fig. 4] we show a device on the rail, so that when the switch is thrown to open the rail, allowing connections to be made with some other part of the equipment, the trolley is held in place, and is not allowed to pass off the end of the track. When this trolley again assumes its proper position the check is automatically thrown out of the way. Another [Fig. 5] shows our band saws in the pattern shop covered with a wooden case [A], which serves the double purpose of preventing the saw flying should it break and enabling [B] an exhaust to be attached, so that the dust is drawn up through the hood and away from the workman. Both the saws and planers have placed before them a rubber mat, so that a person operating is not liable to slip, and here also the sawdust shavings are exhausted through a pipe."

Fig. 4.—Brown & Sharpe Foundry.—Safety Device on an Overhead Carrier.

Photographing Accidents and Keeping Records.

A practice followed by the Lackawanna Steel Company in maintaining a photograph department is in such keeping with this report that we comment here on its utility. When this company has an accident of any consequence it preserves every piece of machinery and every part of any structure exactly as it was when the accident took place. Even the men who stood near by the injured person are put in position, and the scene is then photographed while it is fresh, and every one is able to say distinctly just where he was, and what he was doing at the time of the accident. Such records are sure to be valuable in case of any litigation. They are also useful in acquainting interested parties with the conditions under which the accident took place, and thus afford a means of preventing them in the future. All foundries may not find it advantageous to utilize the camera for this purpose, but a complete record of an accident would be found useful, no matter whether an action at law is anticipated or not.

Insurance and Compensation of Those Injured Through Accidents.

In the preliminary report, mention is made of $48,679.58 having been spent by 190 concerns, out of 1084 reporting, for accident premiums. This question is receiving a great deal of attenion at the present time, and it will be of interest to record here a few selected views on the subject.

An Illinois firm, having 100 employees, says: "We have a shop employees' insurance paying $9 per week for sickness or injury. This is governed exclusively by the employees themselves. This has a tendency to keep every one interested in preventing accidents."

A foundry in Ohio, having 450 employees, says: "We have a benefit association into which each employee pays 30 cents a month, and is entitled when sick or injured to $5 per week, for 13 weeks. From July to July we paid out $1300, and believe it keeps the men together."

A firm in the State of Washington says: "It is our opinion that all manufacturers and those employing labor subject to accidents should be classified and all pay a certain tax to a State fund, from which all worthy sufferers should receive a stipulated sum. The fund mentioned could be controlled and disbursed by a commissioner; imposters sent to prison. More than 50 per cent. of the damages actually paid goes to court costs and attorney fees, and those entitled to the benefit get comparatively little."

A long established large stove and hollow ware company of Illinois says: "It is manifestly unfair that railroads, manufacturers, &c., should be held responsible for accidents to their employees. We consider railroads but common carriers, who are serving the public interests, and manufacturers do likewise. Society in general profits by these, regardless of the fact that persons enter into business for profit. Labor does not work for the love of toil, nor do manufacturers employ labor in the spirit of philanthropy. It's not a matter of sentiment, but a matter of business. In our opinion, if the law says a man's life is worth $10,000 then let each one contribute to reimburse his heirs for that amount, in the case of accidental death, regardless whether the accident was due to carelessness on his part or not. The responsibility should rest on the State and not on the individual, and the people in general should contribute toward the support of the same. In our opinion, it is as senseless and absurd as if a manufacturer were to be killed in his own plant and his heirs would expect the men employed in that plant to contribute their pro rata of the $10,000 which the law now considers is the worth of a man's life. Few firms are able to stand this imposition, but fortunately these matters are carried from one court to another, until the contestants are worn out and a compromise is effected. It is all absurdly unjust; what we advocate is that the State should reimburse the heirs, regardless of their financial standing, &c. What is fair

for the one should be fair for the other, and let each man contribute his share toward the support of 'accident insurance.' There are many phases by which this matter may be discussed, but we feel positive that at present we are working along the wrong lines.

It would seem that in connection with this work there is need for educating our employees to seeing the necessity of every one carrying accident insurance.

Conclusion.

This report is but the summary of a year's work, and while having cost your committee much labor and the association some treasure, we feel that the results have more than repaid us. We are seeking how to prevent accidents, and as urged by your chairman a year ago, the chief factor in getting started right is to first discover the underlying causes of accidents. This done, we can apply the remedies, but not before. A year ago no one could find a public paper or magazine in which the responsibility for accidents was placed anywhere but on the employer's shoulders. That the employee's carelessness might have something to do with it never entered the calculation of the law maker or editor. To-day this is different and is practically the result of activity and publicity in the right quarters.

Miss Eastman, in the third part of "The Pittsburgh Survey," in considering the cause of accidents, has practically adopted your committee's classification, and does not lay all the blame as of old. This is encouraging and shows that a turn has come in the right direction. Before many years work of this kind must help to prevent out present carnage in industrial establishments.

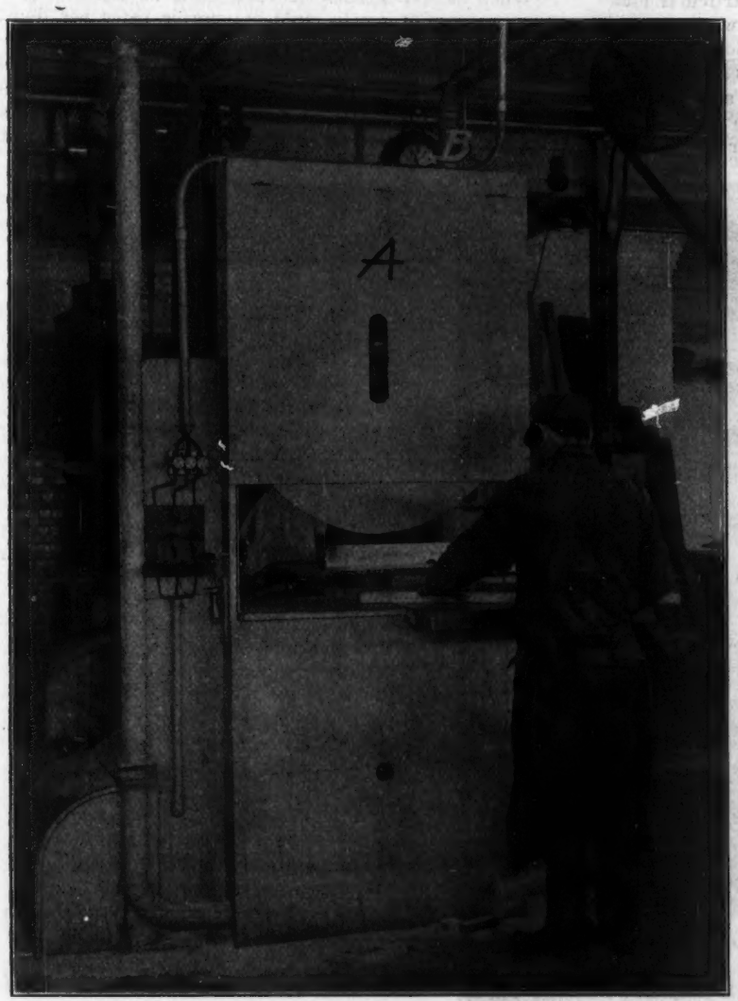

Fig. 5.—Brown & Sharpe Pattern Shop.—Band Saw Covered with a Wooden Case.

A Railroad Automobile.—A motor inspection car similar to a big touring car has been built by the Chicago & Northwestern Railway for the use of the superintendent of its Peninsula Division. It has flanged steel wheels for running on rails, which, however, may be replaced by pneumatic tired wheels and the steering wheel unlocked, so that it may be used as an ordinary automobile. It carries seven passengers, is driven by a 22-hp. engine and will take the place of the superintendent's private car.

The Iron Ore Deposits of Nova Scotia.

The Canada Department of Mines at Ottawa has just issued a profusely illustrated report on the iron ore deposits of Nova Scotia which has been prepared by Dr. J. E. Woodman, who spent the summer of 1906 and the spring of 1907 in the survey. In the first part of the report the geology of the deposits, the mining policy of the province and the system of bounties are discussed. The second takes up in detail the developments in the Clementsport and Nictaux-Tarbrook basins, the deposits in Hants and Colchester counties, the ores of the western Cobequid range of hills, the partly bedded ores of Arisaig and Malignant cove, the ores of Whycocomagh and of Barachois. The general results of this study are not encouraging, particularly in view of the competition of the Wabana ores of Bell Island, Newfoundland.

The conditions affecting the iron mining industry are summarized in the report itself in the discussion of the question of aid by bounties. There are in Nova Scotia few very large deposits of such known size and quality as could insure a sufficient output for a number of years to warrant the erection of new iron and steel works. There are many small deposits, a number of which are already well enough known to indicate that they could supply a limited amount of ore to a furnace provided prices were such as to make mining profitable. These deposits are almost invariably so situated that for most of the ore considerable transportation would be required to any furnace likely to be erected. The grade of such large deposits as are now known is low and that of small deposits varies much, but at present no large high grade ore bodies are known in the province. In many, perhaps most, of the ore localities the cost of mining is not especially low, the high dip of the ore bodies and low topography and the necessary hoisting of ore and pumping of water being some of the factors in raising the figures. There are but two locations in the province which at present appear likely to be favorable for the erection of large reduction works.

The Whitman & Barnes Mfg. Company announces the consolidation of all its offices at Akron, Ohio. This city is the headquarters of the company, which is an Ohio corporation. Heretofore its business has been handled from several different points, but it has been decided that the trade will be given better satisfaction and more prompt service, while the company will be enabled to do the work more economically by concentrating the offices.

The American Oxy-Hydric Company, Milwaukee, Wis., is the licensee in this country of a Belgian oxy-hydric process of metal cutting and welding. A plant for the application of this process is now being installed in one of the buildings of the Falk Company in Milwaukee. Herman Falk, president of the Falk Company, and members of the firm of Pawling & Harnischfeger are interested in the new company.

The Gas Engine in Central Station Work.*

BY WM. F. FLINT.

The gas engine is very valuable for the economic use of fuel in the production of power. The object of this paper is to make clear some of its possibilities, particularly when operated in connection with the bituminous coal gas producer, and to state facts which will enable each central station manager to see its application to his local conditions.

To get the best results from the gas engine its economies at different loads must be known. The following data is based on the performances of the particular make of engines (Westinghouse) with which the writer is most familiar. Referring to the left-hand portion of Fig. 1: Curves A and A' are to be read to the scales at the bottom and left and curves B and B' to the scales at the bottom and right. Curves A and B are the average test performances of a number of 140 b.h.p. producer gas engines operating on producer gas. Curves A' and B' may be regarded as poor performances for this size of engine and ones which would call for correction by the operator. Curve B' may also be read as the probable good performance of a 10-hp. two-cylinder engine by disregarding the brake horsepower scale and reading the full and half-load economies for the large engine as applicable to the corresponding loads on the small engine. Larger engines may be expected to show even better economies at corresponding fractions of their rating than indicated by curve A, but the betterment is not very great and may be disregarded in this paper. One of the peculiarities of gas engines is that small ones show almost equally as good economy as large ones.

For the purpose of making the figures which follow correspond with results which may be relied on in commercial operation, they will be based on curves A' and B'. The lesson to be drawn from these curves is that the sizes and numbers of gas engines installed should be such as to permit shutting down any unit or units and transferring their load to others when it falls below one-half the rating. An engine which uses 11,400 effective British thermal units per brake horsepower hour on full load may be expected to use 35 per cent. more on half load and to fall off in economy very fast below half load.

Bituminous Fuel.

At the right of Fig. 1 are shown the results which may be expected from a double fire zone bituminous producer. These are based on tests with different grades of coal extending over a year's time, each test representing from three to fifteen days' continuous operation. The standby loss shown on this sheet is much greater than necessary, as was proved by afterward more carefully adjusting the draft. The producer was capable of delivering 1,900,000 effective British thermal units in gas per hour continuously on Pittsburgh run-of-mine coal averaging 13,300 B.t.u. per pound as fired, and of delivering considerably greater quantities of gas for short periods of two hours.

When poorer grades of fuel, such as lignite, were used they could not be fired at greater rates per hour, and hence the ouput of the producer was reduced in proportion to the heat value of the coal. There was some falling off in the heat value of the gas per cubic foot as the output decreased, but this was not serious so long as the load did not fall below one-quarter the rated output

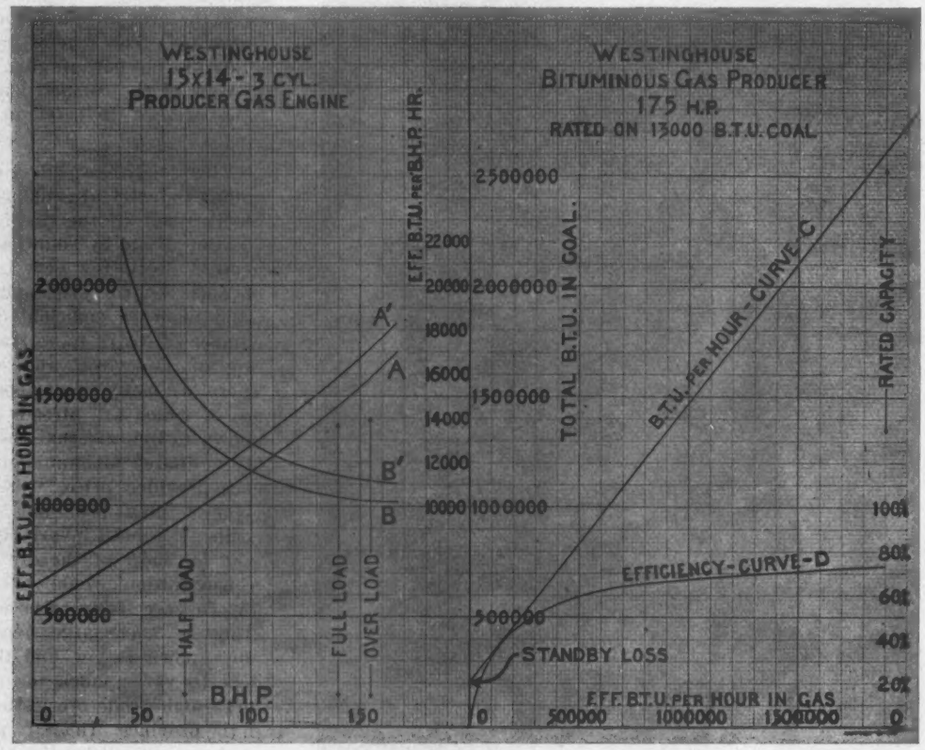

Fig. 1.—Curves from Tests of a Producer Gas Engine and a Bituminous Gas Producer.

of the producer. The producer referred to above† consists of an upper and a lower section with an annular water cooled offtake casting between them. The fire in the upper section drives off the volatiles and breaks up the resulting vapors by virtue of operating on the down draft principle. The fire in the lower section consumes the coke descending from the upper section and allows the ashes to free themselves from practically all fuel. The lower fire thus rests on a bed of ashes extending down into a water sealed basin. Ashes may be readily raked out from time to time without disturbing the operation of the producer. The relative rate of combustion of these two fires is controlled by a valve in each supply pipe. This air is drawn in first through an air space in the top cover of the producer, where it is warmed and then through the steam space of the water cooled offtake casting where it takes automatically the amount of moisture required to control the temperature of the fuel bed and to properly enrich the gas.

The gas leaving the producer is practically free from tar, but contains some lampblack and dust, which are washed out in the static washer. The gas then enters a

* A paper presented at the convention of the Canadian Electric Association at Quebec, June, 1909.

† An illustrated description of the Westinghouse double-zone bituminous gas producer appeared in *The Iron Age* June 17, 1909, page 1916.

large elevated drum, from which it is drawn off by a motor driven rotary blower which supplies gas at a constant pressure through a regulating valve to the line leading to the engines. This regulating valve is operated by a small holder type regulator and by-passes any gas not required by the engines back into the elevated drum, where it mixes with the gas delivered by the producer, and serves to even up the richness of the output. The producer thus operates under suction, and the charging door may be freely opened to put in new coal or to inspect the fire without danger of gas escaping or disturbance of the quality produced. There is usually a momentary enrichment of the gas when the fire is poked, and this is made harmless by being mixed in the mixing tank with gas of more average richness. Poking is required at intervals of from one to two hours to keep the fire bed uniform. Referring again to the right hand portion of Fig. 1 it will be seen that the producer efficiency remains fairly constant at about 70 per cent. over a wide range of loads, and that its standby loss is a very small per cent. of its capacity. The power required to operate the exhauster is not more than about 2 per cent. of the output of the producer.

There are several other successful bituminous producers on the market, but the one described above embodies valuable features not found in them.

Anthracite Fuel.

There are many successful anthracite producers on the market and they have the same characteristics of small standby losses and high efficiency over a wide range of load. In fact, tests made on a nonbituminous suction producer of about the same size as the bituminous producer referred to above, gave efficiencies ranging from 73 per cent. at one-half to 79 per cent. at full rate output. The producer used was of the up-draft suction type. It may be operated by the suction of the engine if desired, but where two or more engines are to take gas from one or more producers it is advisable to install a centrifugal fan to deliver the gas under pressure, for the engines are easier started and will develop about 5 per cent. more power, which more than compensates for the power required by the fan. The steam required is made in the top plate of the producer, which, like the one just described, has a water sealed bottom and requires no gas holder.

In the pressure type anthracite producer, the air is drawn into the base by a steam jet, which affords sufficient pressure to overcome the resistance of the fuel bed and deliver gas to the line. This is a good arrangement where live steam is available, but if a small boiler has to be fired for the producer alone, its efficiency is usually so poor that its coal consumption is a material factor.

Other Fuels.

Where available at satisfactory price natural gas is the ideal fuel. The engine cylinders are usually smaller for the same power than for producer gas, but the British thermal unit consumption will be substantially as shown in Fig. 1, curves B and B'.

In this connection Fig. 2 will be of interest, for it shows graphically the constituents of the principal fuel gases. As a rule those which contain a large proportion of nitrogen and carbon dioxide (CO_2) require larger engine cylinders, and will stand higher compression than those containing little or no incombustible gas, but they give fully as high or higher efficiency in the engine.

The gas engine is so well known that it need not be described in detail at this point.

A Typical Example.

The use of the curves may be best brought out by assuming a central station load curve and figuring out the desirable engine sizes and method of operation. The load condition will be assumed to be that shown in the accompanying tables, which are based on figures for 1906 obtained from the Bradford Electric Light & Power Company, Bradford, Pa., through the courtesy of the general manager, J. H. Rose.

Lightest Load Day in Year.

Time.	Load. Kw.	Units in service.	Load.	Average b.h.p.	Eff. B.t.u. per hr. in gas.	Total B.t.u. per hour coal.	Pounds 13,000 B.t.u. coal.
11 p.m.	66						
12 a.m.	55						
1 "	42						
2 "	37						
3 "	35						
4 "	35				100-hp. engine at 55.5% load same efficiency as 140-hp. engine at 78 b.h.p., which by curve B', Fig. 1, requires 14,600 eff. B.t.u. per b.h.p. hour: 55.5 b.h.p. × 14,600 = 810,000 eff. B.t.u. per hour.	810,000 eff. B.t.u. in gas per hour by curve C, Fig. 1. 1,230,000 total B.t.u. per hour in coal. 200,000 total B.t.u. per hour stand-by. 1,430,000 total B.t.u.	1,430,000 / 13,000 = 110 lb. coal per h. 110 lb. / 36 kw. = 3.06 lb. coal per kw.h. 110 lb. × 19 hr. = 2090 lb.
5 "	35	1 100-hp. gas engine and 66-kw. gen. 1 175-hp. producer making gas. 1 175-hp. producer at stand-by. For a period of 19 hr.	Aver., 36 kw. Total, 685 kw.h.	Assume generator efficiency 87% at 55% load: 36 kw. / .746×.87 b.h.p. = 55.5			
6 "	36						
7 "	37						
8 "	33						
9 "	33						
10 "	29						
11 "	29						
12 m.	29						
1 p.m.	29						
2 "	29						
3 "	26						
4 "	24						
5 "	26						
6 "	55						
6 "	55	1 190-hp. engine and 130-kw. generator. 1 175-hp. producer making gas. 1 175-hp producer at stand-by. For a period of 5 hr.	Aver., 88.2 kw. Total, 441 kw.h.	Generator efficiency 89% at 68% load: 88.2 kw. / .746×.89 b.h.p. = 134	190-hp. engine, 70% load, like 140-hp. engine at 98 b.h.p.: 134 b.h.p. × 13,000 eff. B.t.u. = 1,740,000 eff. B.t.u. per hour.	1,740,000 in gas means 2,410,000 in coal: 200,000 stand-by. 2,610,000 total B.t.u.	2,610,000 / 13,000 = 201 lb. 201 / 88.2 = 2.28 lb. 201 lb. × 5 hr. = 1005 lb. Total, 3095 lb. 2.75 lb. per kw.h.
7 "	95						
8 "	112						
9 "	104						
10 "	97						
11 "	66						

Heaviest Load Day in Year.

Time.	Load. Kw.	Units in service.	Load.	Average b.h.p.	Eff. B.t.u. per hr. in gas.	Total B.t.u. per h. in coal.	Pounds of 13,000 B.t.u. coal.
12 a.m.	66						
1 "	52	1 100-hp. engine and 66-kw. generator. 1 175-hp. producer making gas. 1 175-hp. producer at stand-by. For period of 8 hr.	Aver., 51.5 kw. Tot. kw.h., 412.	51.5 kw. / .746×.90 b.h.p. = 77	77% of engine rating equivalent to 108 b.h.p. on 140-engine, which by curve B', Fig. 1, requires 12,400 eff. B.t.u. 77 b.h.p. × 12,400 = 955,000 eff. B.t.u.	955,000 eff. B.t.u. in gas by curve C, Fig. 1, requires 1,410,000 tot. B.t.u. in coal. 200,000 tot. B.t.u. stand-by. 1,610,000 tot. B.t.u.	1,610,000 / 13,000 = 124 lb. per h. 124 lb. / 51.5 kw. = 2.41 lb. per kw.h. 124 lb. × 8 hr. = 992 lb.
2 "	44						
3 "	40						
4 "	40						
5 "	40						
6 "	46						
7 "	60						
8 "	75						
8 "	75	2 100-hp. eng. and 2 66-kw. gen. 1 175-hp. producer making gas. 1 175-hp. producer at stand-by. For period of 8 hr.	Aver., 88 kw. Tot. kw.h., 704.	88 kw. / .746×.88 b.h.p. = 134	67% of engine rating equivalent to 94 b.h.p. on 140-hp. engine, which by curve B' requires 13,200 eff. B.t.u. 134 b.h.p. × 13,200 = 1,770,000.	1,770,000 eff. B.t.u. in gas per h. by curve C, Fig. 1, requires 2,450,000. tot. B.t.u. in coal. 200,000 tot. B.t.u. stand-by. 2,650,000 tot. b.t.u.	2,650,000 / 13,000 = 204 lb. per h. 204 lb. / 88 kw. = 2.32 lb. per kw.h. 204 lb. × 8 hr. = 1632 lb.
9 "	79						
10 "	72						
11 "	68						
12 m.	77						
1 p.m.	88						
2 "	104						
3 "	107						
4 "	121						
4 "	121	1 100-hp. eng. and 66-kw. gen. 1 190-hp. eng. and 130-kw. gen. 2 175-hp. producers making gas. For period of 8 hr.	Aver., 169 kw. Tot. kw.h., 1352 Grand total, 2468 kw.h.	169 kw. / .746×.91 b.h.p. = 250	86% of engine rating equivalent to 121 b.h.p. on 140-hp. engine, which by curve B', Fig. 1, requires 11,900 eff. B.t.u. 250 b.h.p. × 11,900 = 3,000,000.	1,500,000 eff. B.t.u. from each producer means 2,100,000 total B.t.u. in coal to each. or 4,200,000 total B.t.u. in coal to the two.	4,200,000 / 13,000 = 323 lb. per h. 323 lb. / 169 kw. = 1.91 lb. per kw.h. 323 lb. × 8 hr. = 2584 lb. Total, 5208 lb. 2.11 lb. per kw.h.
5 "	165						
6 "	191						
7 "	200						
8 "	224						
9 "	213						
10 "	187						
11 "	154						
12 a.m.	66						

This plant is located in the natural gas region and adopted gas engines about 10 years ago, and found they required about one-third as much gas as the boilers did which supplied the steam engines.

The street arc light load is not included in these figures, for it is a substantially constant load, and is taken care of by two 125-hp. gas engines driving four belted, 50-light Thomson-Houston arc machines. In a more modern installation the arc lights would probably be operated from the alternating current bus-bars and form a part of the general station load.

These extremes of load might well be handled by a plant consisting of three 175-hp. bituminous coal gas producers, two 190-hp. engines driving 130-kw. alternators and two 100-hp. engines driving 66-kw. alternators. One of the larger engines and one producer would be held as a spare to guarantee continuity of service from the start, and would stand ready to accommodate an increase in business. The first two columns of the tables show the loads for all hours of the day and night. The third column shows the units which should be running. The fourth column gives the average kilowatt load and the kilowatt-hours. The fifth column gives the brake horsepower load calculated from the average kilowatt load by assuming suitable generator efficiencies. The remaining

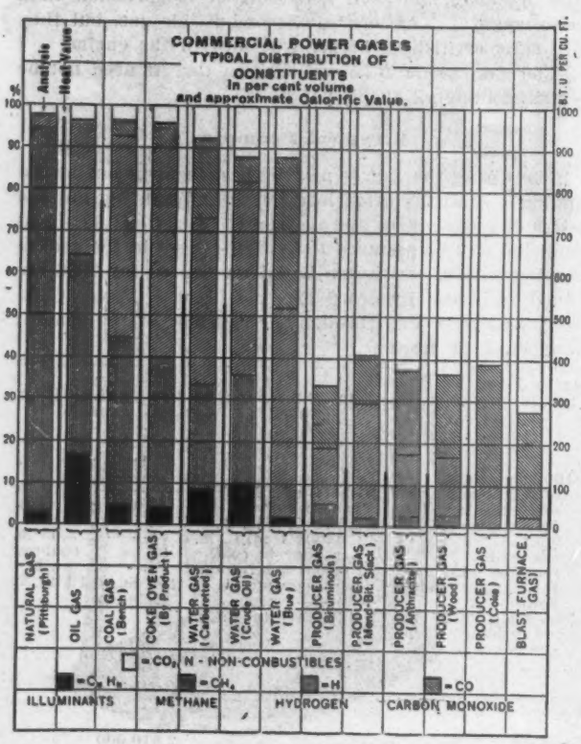

Fig. 2.—Chart of the Relative Value of Commercial Power Gases.

columns are figured with the aid of curves B′ and C, Fig. 1, and give the total consumption and the coal per kilowatt-hour for the several load conditions. The results in this instance are 2.75 lb. per kilowatt-hour for the day showing the lightest loads and 2.11 lb. per kilowatt-hour for the day showing the heaviest loads. It should be easily possible to run such a plant on an average of 2.5 lb. per kilowatt-hour throughout the year.

It seems safe to assume that ordinarily the waste heat from the producers and engines would be more than enough to warm the power house even in the coldest weather, and this could be readily supplemented when necessary by burning the producer gas in suitable stoves, much as natural gas is burned in the Pittsburgh territory.

Storage Battery Auxiliaries.

Under some conditions, probably rather uncommon in central station work, the storage battery is a desirable auxiliary to gas engines. For instance, a central station may have an opportunity to improve its load factor, particularly during the day, by selling 500-volt direct current to a small street railroad company. The extreme fluctuations of this class of load would make it ordinarily most undesirable, for enough engines would have to be operated to meet the maximum demand and the average load would be a very small fraction of their rating. The storage battery is eminently fitted to even up the demand on the power house, particularly when equipped with a storage battery regulator which can be set to draw a constant current from the power supply and use it either to build up its own charge or to supplement its output to the line. Such a battery works at rapidly alternating and very high rates of discharge and charge. While its watt efficiency is probably not over 75 per cent., or, including the transformer, rotary converter and booster, not over 0.75 x 0.97 x 0.92 x 0.95 = 0.63, it has the valuable property of putting a steady average load on all the other apparatus, except its booster, back to the engine in the power house, and thus allowing a comparatively small engine running at or near to full load to carry a load having peaks 2.4 or even 6 times the mean. The first cost of such a battery and its auxiliaries will often be but a fraction of the cost of the engine, generator and other apparatus which would be required to carry the peak loads without the battery and the power losses with the battery will be less than without it by virtue of running the engine, generators, &c., at efficient loads.

Again, a small central station may have a very small all-day load, which necessitates keeping an engineer on duty whose services for one shift might be otherwise dispensed with. In this instance, particularly if it is a direct current load, a battery may be installed to carry it and the losses in the battery may easily be less than those involved in running an underloaded engine, particularly when the charging of the battery is made to bring up the load on the engine to one corresponding to good efficiency.

Canada and the American Mica Market.

TORONTO, July 17, 1909.—There is some unsettlement in the Canadian mica business as a consequence of uncertainty as to what the United States tariff is to be. On the part of the mica manufacturing firms of Ottawa, the center of the Canadian industry, there are hopes that the specific duty will be lowered 1 cent a pound. With an increase in the duty it is contended that the mica exporters of India will be in a better position to sell in the United States market than the Canadian exporters, for the reason that cheap labor is in favor of the former. The Canadian mica business was somewhat slower in rallying from the effects of the 1907-8 depression than most other branches of trade, customers in the United States finding the stocks purchased on the eve of that dull period sufficient to last them much longer than similar quantities had usually served. Several mines have not yet started up, and if the United States duty is increased the prospects of their soon resuming operations will not be brightened. A large number of Ottawa people have money invested in mica enterprises. The increased demand for mica in the manufacturing of electrical machinery has been helpful to the producers. The General Electric Company's mine in Loughboro Township furnishes a large part of the total output. In its trimming factory in Ottawa 150 girls are employed, the output going to the company's works at Schenectady, N. Y. At Carleton Place and at Smith's Falls the company has other trimming factories. The Laurentide Mica Company's factory in Ottawa employs about 400 girls and 50 other hands. C. A. C. J.

France is stated to have experienced the coldest and wettest June and July since 1854. The prevailing low temperature and excessive rains have wrought severe injury to vegetables, fruits and grapes, and delayed the maturing of all cereal crops.

In a German trade paper the announcement is made that an enameling concern has bought a tract of meadow land to build a factory to employ 600 persons, and that active operations are to begin after the crop of hay has been gathered in.

The New Leffler Double Seamer.

A new machine, declared to represent the farthest point to which the art of double seaming has been carried, has been added to the line of standard double seamers made by Charles Leffler & Co., 49 Clymer street, Brooklyn, N. Y. It is known as the No. 21 double head automatic square double seamer, and will simultaneously double seam the top and bottom to the body of square and irregular cans, such as cocoa cans, powder cans, canisters, &c. Heretofore, it has been possible to seam only one end at a time on cans of this character. There are several automatic and semiautomatic machines on the market for attaching single ends. With the patented straight line motion the manufacturers of this new machine employ on their single end seamer it is possible to double seam more than 10,000 ends per day in certain shapes. The machine is entirely automatic, and can be operated by one man. In some factories a helper is used, who places the bottoms in the bodies, preparing them for the operator. A machine, therefore, which doubles its output will save the time of one or two men, as the case may be, and the machine illustrated herewith is claimed to accomplish this saving.

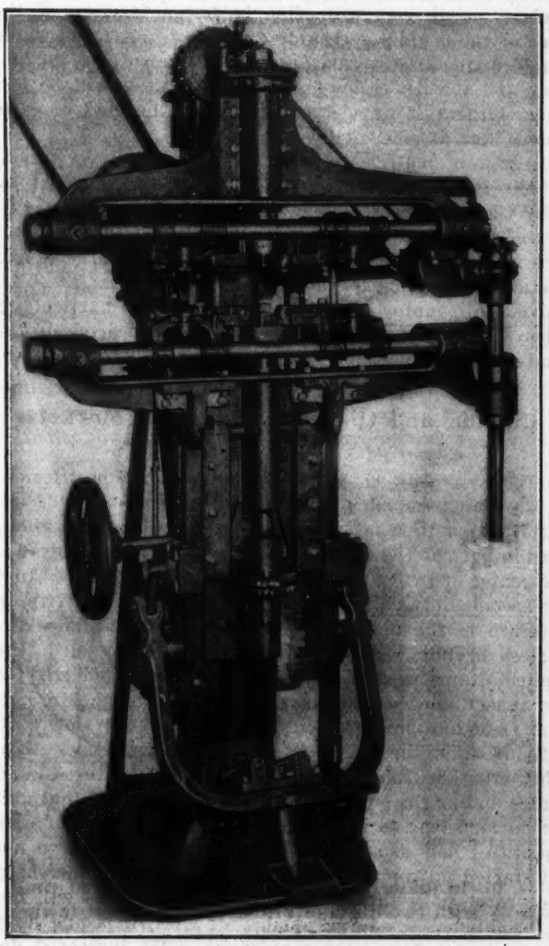

Fig. 1.—Front View.

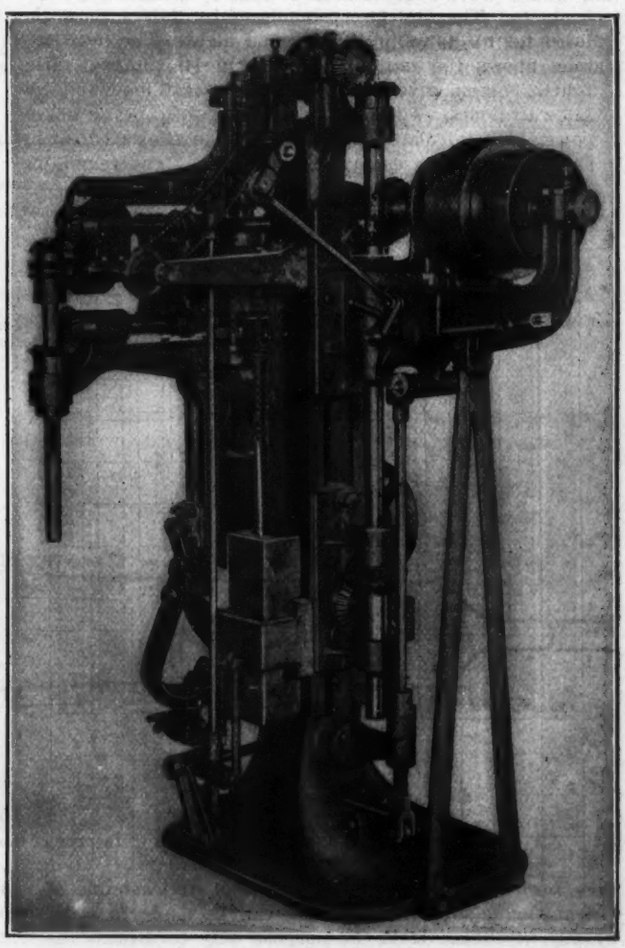

Fig. 2.—Rear View.

The New Double Seamer Made by Charles Leffler & Co., Brooklyn, N. Y.

The operation is entirely automatic in every respect, all that is required of the operator being to put the cans on and off and to press the treadle. Two chucks are used to engage the can, one to fit each head. The can is placed on the lower chuck, and stepping on the treadle raises this chuck and clamps the work. The treadle locks in position, and at the same time the friction clutch at the back engages and starts the machine. The seaming rolls are automatically brought into contact with the work by means of the straight line motion so successfully employed in single end machines. After the double seaming is completed the friction clutch disengages the machine stops, the lower chuck automatically drops, and the treadle is released and returned to its original position.

Two changes may be obtained in the number of revolutions made by the can while the seaming rolls are engaged. The driving cone on the friction clutch has two steps to vary the speed of the large and small work. Despite the complicated movements the machine works as easily as the single end machine, and may be run at the same speed. The double seaming rolls may be very accurately adjusted, and a perfect seam rolled at the highest speed. The machine has a wide range of adjustments, which are quickly made. It will take work from the smallest up to 8 in. across the largest dimension of the top, and 12 in. high. A separate pair of chucks is required for each size of tops and bottoms, but any hight of can over 2½ in. may be made with any given bottom.

While the increase in the output and the saving in labor are very important items, another distinct advantage is obtained by the use of this machine, and that is that it makes cans with perfectly straight bodies. Cans made in a single end seamer, particularly when of large size, have a tendency to twist, as the open end tends to drag the double seamed end. The fact that two chucks are employed and that they are always in the same relative position overcomes this tendency entirely. Both ends of the can are driven at the same speed and stop at the same point, therefore straight cans must result.

The Nathusius electric furnace has been introduced at the works of the Oberschlesische Eisenbedarfs A. G., at Friedenshuette. The patents are controlled by the Westdeutsche Thomas Phosphat Werke in Berlin.

The New England Foundrymen's Association held its annual outing at the Relay House, Bass Point, on Boston harbor, July 14, with a large attendance of members and their friends.

Determining Carbon in Steel.

A Successful Direct Combustion Apparatus.

BY WARREN I. KEELER.

Many articles have been published on the determination of carbon in iron, steel and kindred products by direct combustion. The author has two reasons for adding to this already long list—the ordinary steel works chemist is too busy to work out the detail of new apparatus and new methods, and, unfortunately, many of the previous articles on direct combustion are lacking in detail; moreover, it is the author's belief that the combustion apparatus about to be described is the most satisfactory which has ever been used in the determination of carbon, and, if universally adopted by the steel works chemist, would prove a great boon to him by eliminating all trouble and worry in this most important of all his tests. No originality is claimed for the apparatus, except in the working out of some of the minor details; indeed, the tube itself is listed in the catalogue of at least one of the platinum supply houses and can be made to order by any of them. It is the purpose only to discuss the detail of an apparatus which has been found, after several months' continuous use in a large metallurgical laboratory, to be unsurpassed for speed and accuracy, a statement which will be substantiated with data taken from actual determinations.

It is surprising that there are comparatively few direct combustion tubes in use in metallurgical and commercial laboratories. It appears that the chemist is held back either by expense or lack of belief in the apparatus, but there is no excuse for this on either score. A tube costing approximately $100 will average 8000 determinations and may then be sold as scrap platinum at 75 per cent. of the initial expense, making the actual expense per determination, due to the tube, only 0.3 cent. Moreover, this apparatus will get the full carbon content of a sample of titanium carbide, containing 25 per cent. carbon (free and combined), in from 15 to 20 min.

The Tube.

Fig. 1 shows the tube. Only the actual tube, where combustion and oxidation with the copper oxide takes place, is platinum; the water cooler and stopper are German silver, as the exit tube might well be, since the makers merely solder a platinum tube of the smaller bore to the main tube instead of drawing it out.

The boat used must conform to the size of the tube, and while the one shown will be found quite convenient, it is not necessary to have it this shape. The author has used some platinum boats of the old indirect type with side tube for filtering.

The expense of the tube is relatively low. One like the drawing cost $108 the latter part of 1908. This cost may be lessened by replacing the small outlet tube of platinum with German silver. The price varies with the weight of the tube, which in turn varies with the maker from 100 to 130 g. The tube used by the author weighs about 125 g. The tube is ordinarily sold at so much per gram of platinum, plus $5 for the water cooler.

A further water cooling device may be used on the small exit end of the tube, but it is really unnecessary, as a piece of cotton kept moist with water continuously dropped from a separatory funnel is quite sufficient. A water cooler may be easily made, however, of two pieces of brass tubing about 1½ in. long, one just large enough to slip over the platinum exit tube, and the other

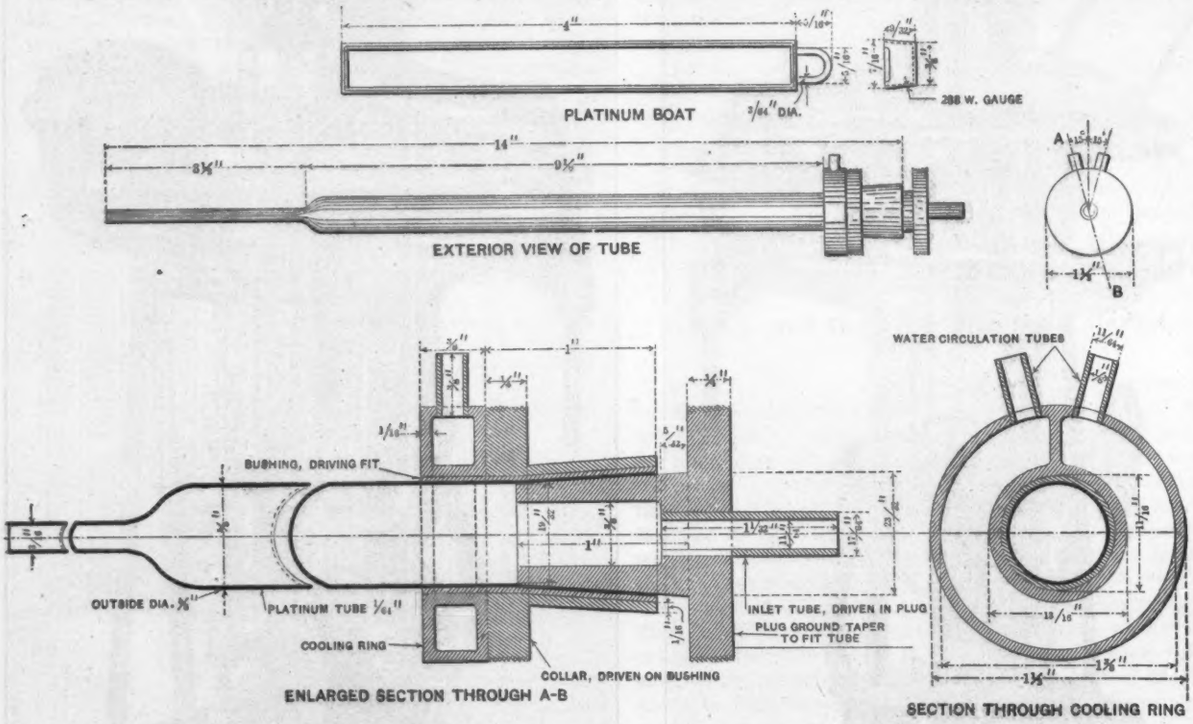

Fig. 1.—Details of the Platinum Tube Used in the Direct Combustion Determination of Carbon in Steel Samples.

about 1 in. in diameter. These tubes are soldered concentrically with two disks of brass, with holes cut in the center for the inner tube and with small pieces of brass tubing as inlet and outlet for the water in the outer tube. This device, quickly and inexpensively made, when joined in series with the entrance water cooler works most admirably.

Most distinctive of this apparatus (Figs. 2, 3 and 4 *) is the position of the copper oxide, used for the complete oxidation to carbon dioxide of the combusted carbon. In most direct combustion trains the copper oxide is placed either in the main tube in the furnace, where the heat is too great, or entirely outside of the combustion tube in a small porcelain tube, such as is frequently used for preheaters, thereby encumbering the already too extensive train. Here the copper oxide, in the form of an oxidized coil made from copper gauze, is placed in the main combustion tube, but at the extreme left end and outside of the furnace, where it is kept at a dull red heat by an ordinary bunsen burner.

The Furnace.

The furnace for this tube need not be elaborate; a small one the width of two standard tiles is sufficient. Instead of purchasing one for $12 or so one can readily

* The photographs are of apparatus, differing slightly in detail from that described.

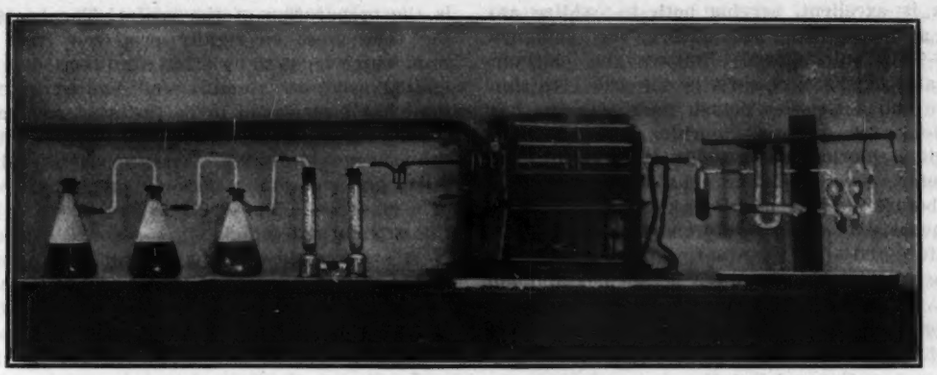

Fig. 2.—The Complete Apparatus for the Determination of Carbon by Direct Combustion.

be constructed from two pieces of sheet iron for sides, some small pieces of bar iron for braces and two pieces of angle iron as supports for the tiles. No especial burner or blast is required. A small battery of three bunsen burners on a base works perfectly. A single tirrell burner is used outside of the furnace to heat the copper oxide. Small fishtails or flame spreaders are also convenient, heating the tube more evenly.

At first much trouble was had, due to the dropping of small pieces of scale and iron oxide on the red hot platinum tube, the evil of which is quite apparent. This was corrected by replacing the small steel rods serving as upper supports for the tiles with rods of the new fused silico-quartz. Some difficulty was also experienced from having the platinum tube rest directly upon the sheet iron sides of the furnace. Wrapping the tube at these points with asbestos twine was tried and finally the difficulty was entirely overcome by making the bottom of the holes in the asbestos shields ¼ in. higher than the bottom of the holes in the sides of the furnace.

The Pretrain.

In making up a pretrain there are two things to consider—simplicity and efficiency. There are two styles of purifying apparatus available—the so-called preheater and a number of different oxidizing solutions. Either type of train serves the same purpose to oxidize any hydrocarbons in the air or oxygen to carbon dioxide and water, thus rendering the impurities soluble in the potash and calcium chloride used. The preheater is universally considered the more efficient oxidizer, but it complicates the train too much. After trying both types it was decided that, while the preheater works admirably, a battery of solutions such as is at present in use is equally efficient and much more simple. The pretrain is made up as follows: First a simple bubble tube to act as a safety; next a small suction bottle, two-thirds full of chromic anhydride; then another suction bottle, two-thirds full of potassium permanganate; finally a third bottle two-thirds full of potassium hydrate, followed by a calcium chloride tower. The solutions are made up as follows: Chromic anhydride solution: 30 g. chromium trioxide (CrO_3), 250 c. c. water, 200 c. c. sulphuric acid (H_2SO_4). Potassium permanganate solution: a simple saturated water solution (1 to 16). Potassium hydrate solution: as per Blair, specific gravity of 1.27, or about 37 g. to each 100 c. c. of water.

Many people cling to the preheater because it gives such excellent results. After using the above train for a year on both direct and indirect combustion apparatus the author is satisfied that these solutions give equally good results and are far less trouble, for in spite of all precautions the porcelain tubes will occasionally crack and the rubber stoppers are continually loosening, due to the heat.

It is also convenient to introduce a stop cock between the tower and the tube, thereby enabling one to keep a greater pressure in the pretrain than in the absorption train, consequently obtaining a very steady flow of bubbles through the absorption apparatus.

The Absorption Train.

The direct combustion naturally simplifies the absorption train greatly, because there are no acid or chlorine fumes to catch, and if one has occasion to run only low sulphur tool steels there need be no absorbent for the oxidized sulphur. As will be seen from the photographs, no sulphuric anhydride absorption bulb is used, because the majority of work is on tool steels with a sulphur content of 0.01 to 0.02. If it is necessary to use an absorbent for the oxidized sulphur a bubble tube two-thirds full of the chromic anhydride solution used in

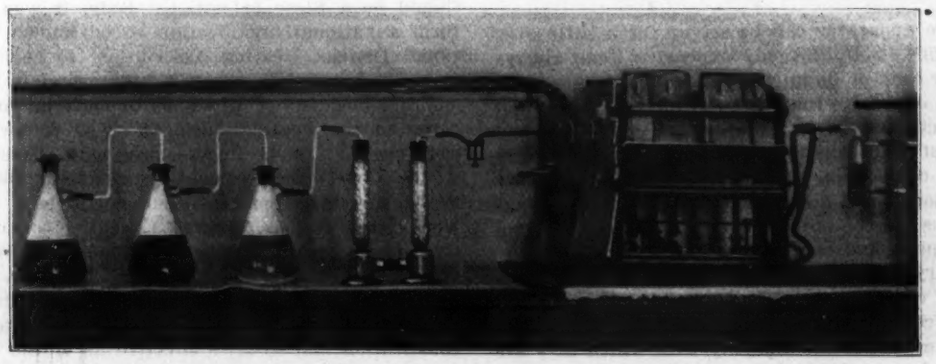

Fig. 3.—A Detail of the Pretrain and Furnace.

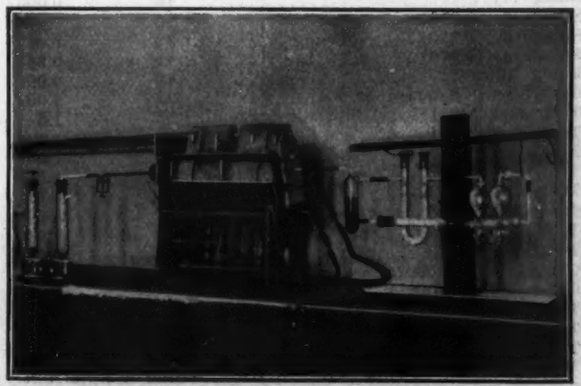

Fig. 4.—Another View of the Furnace and the Absorption Train.

the pretrain is excellent, serving both to oxidize any sulphurous anhydride and to absorb the sulphuric anhydride. This bulb directly follows the platinum tube; then all that is necessary is the usual calcium chloride tube and a Geissler potash bulb with the customary prolong for calcium chloride, followed by a straight calcium chloride tube as additional precaution.

Some prefer using sulphuric acid as an absorbent of moisture before the potash bulb, apparently forgetting that it is inconsistent to use different absorbing media for water before and after the absorption bulb of potash. After all the calcium chloride tube is efficient and but little bother. This furnace is run continuously for two weeks before any appreciable amount of water is in evidence.

General Details.

The view of the furnace in operation, with the front tiles down, Fig. 2, gives an excellent idea of the simplicity and compactness of the whole apparatus. Entire it can be conveniently arranged on a small oblong table or bench, 6 ft. long by 3 ft. wide.

It is not necessary or even advisable to use oxygen gas for the combustion, air being quite sufficient as a combustion medium. The author has the table piped with air under a low pressure (0.2 lb.), but recourse can be had if necessary to ordinary siphoning bottles. Many chemists find it difficult to believe that no pure oxygen is necessary, but as a matter of fact the most difficult of combustions can be performed accurately in about 15 min. with air alone. The danger of back pressure unexpectedly developing in the train, with attendant disaster to both results and solutions, for the prevention of which so many types of safety bulbs have been devised, usually takes place when one is changing from oxygen to air, or conversely, due to the different pressures of the two gases. By doing away with oxygen completely there is no trouble from back pressure unless by inexcusable carelessness.

This whole apparatus can be set up for a little over $100. The tube itself, the only expensive item, always retains 75 per cent. of its initial value. The furnace and train are less expensive than those ordinarily in use and it is a distinct saving to use no oxygen. For the steel works chemist who must work rapidly and accurately the platinum combustion tube is the cheapest. Another saving in expense, and a big one, is due to the fact that this apparatus can be entrusted to a routine man, provided he be quick and careful.

An ordinary tool steel with a carbon content of 1 to 1.20 per cent. can be completely burned in 12 min. One of the 1 per cent. Bessemer standards sold by the Government and noted for the difficulty with which they are dissolved can be completely burned in 15 min. Ordinary open hearth or Bessemer steel may readily be combusted in 10 min. The severest test which has been given is the combustion of a sample of titanium carbide containing 25 per cent. of free and combined carbon in 20 min. The carbon content of these insoluble carbides has been in the past very much of a problem. The following is a table of results taken at random from the author's determinations:

Substance.	Time burned. Minutes.	Carbon found. Per cent.
Blank	10	0.0002
Standard (0.250)	10	0.246
Standard (0.970)	12	0.974
Standard (0.970)	12	0.967
Fused silica	10	0.0002
Government standard (1.06)	15	1.063
Tool steel, No. 1	15	1.348
Tool steel, No. 1	15	1.343
Tool steel, No. 2	12	0.985
Tool steel, No. 2	12	1.000
Tool steel, No. 2	12	0.987
Tool steel, No. 3	12	1.090
Tool steel, No. 3	12	1.076
Tool steel, No. 3	12	1.090
Chromium carbide	15	2.90
Chromium carbine	15	2.52
Titanium carbide, No. 1	15	21.43
Titanium carbide, No. 2	15	24.40
Titanium carbide, No. 2	17	24.75

One factor in this determination, which is apparently a minor detail, but if neglected will cause serious trouble, is the preparation of the boats. The boats as well as the tube must be rigidly protected from the molten iron, which tends to fly off in all directions. After trying ignited asbestos, alumina and ignited silica sand, the sand has been found to be the most efficient protection for the tube and boats, the alumina proving too light and the asbestos too bulky. First a boat is half filled with fairly fine sand and a shallow trough made with the end of a glass rod. The drillings are carefully sprinkled in this trough and completely covered with the sand.

A 1-g. sample is more satisfactory for use than the factor weight of 2.7273, and it is not necessary to reduce the drillings to any further degree of fineness than is necessary for an average sample, Government standards being combusted without any previous preparation.

In closing the fact should be emphasized that this apparatus embodies the three essentials for successful results—accuracy, speed and simplicity. It is worthy of remark that carbon determinations can be made accurately at the rate of six an hour, with apparatus so simplified that it can be successfully operated by any man reasonably sensible and neat. It seems as if such an apparatus were a necessity to the steel works chemist, who, most unfortunately, has to work at high pressure, while still expected to preserve a pretty fair degree of accuracy.

The National District Heating Association.

A meeting was held at the Hotel Boody, Toledo, Ohio, July 15, for the purpose of forming an organization of central station managers interested in district heating. A. C. Rogers was elected temporary chairman and W. A. Wolls temporary secretary. The chairman stated that the purposes of the organization were those influencing all organizations of similar character.

After a discussion as to whether the organization should be a State or national body, it was decided to form a national organization to be known as the National District Heating Association, to be composed of active and associate members; the associate members to embrace members of all supply or material concerns that cater to the heating business. The following officers were elected: A. C. Rogers, president, Cleveland, Ohio; A. N. Cope, vice-president, Springfield, Ohio; W. A. Wolls, secretary-treasurer, Columbus, Ohio. Committees were constituted as follows: Executive committee, E. F. Gwynn, chairman; membership committee, W. A. Wolls, chairman; finance committee, A. N. Cope, chairman; programme committee, D. J. Hard, chairman.

The executive committee was instructed to prepare a constitution and by-laws effective as of the date of the meetings. The annual dues were fixed at $5 for active members and $10 for associate members. The programme committee was authorized to request suitable papers and prepare topics for the first annual meeting. The membership committee was authorized to obtain lists of all central stations now doing district heating and to solicit their membership.

The place of the first annual meeting was fixed at Columbus, Ohio, to cover two days, upon dates in November, 1909, to be hereafter fixed by the executive committee.

Huge Locomotives.—The largest and heaviest locomotives ever built are two of the Mallet articulated compound type for freight hauling, recently built by the Baldwin Locomotive Works, Philadelphia, Pa., for the Southern Pacific Railroad. Each locomotive has 16 driving wheels of 57 in. diameter and four truck wheels. The high pressure cylinders are 26 in. diameter, the low pressure cylinders 40 in. diameter and the stroke 30 in. The boiler is 84 in. diameter and will carry a steam pressure of 200 lb. The total heating surface is 6393 sq. ft., and the grate area 68.4 sq. ft. The water tank on the tender has a capacity of 9000 gal. and the oil tank 2850 gal. The total wheel base of the engine is 56 ft. 7 in., and including the tender 83 ft. 6 in. The total weight of the engine is estimated to be 430,000 lb., and including the tender 600,000 lb. Several new features are incorporated in the design.

The Heber Self-Tightening Rail Joint.

The ordinary rail joint made with two fish plates and four bolts tends to work loose in service. Trains passing over the joints produce vibration, which starts the nuts, and the working of the joint as the load passes from one rail to the next acts in several ways to loosen the parts. As soon as a little play develops it is rapidly aggravated and the ends of the rails cut into the fish plates and the fish plates cup the ends of the rails, permitting quite a little up and down motion, which is known as pumping. This pumping loosens and displaces the material of the road bed underneath the joint, so that it is necessary to tamp the surface at that point frequently to keep the joints at the proper level. It is also necessary to go over the line often and tighten up the bolts to keep the joints rigid. Another evil, creeping of the rail, is produced after the joints are tightened and become so locked that there is no chance for expansion and contraction, with the result that these movements in a group of rails are forced to take place at one point, usually a curve, which causes a lateral displacement of the rail as a whole and accounts for many derailments.

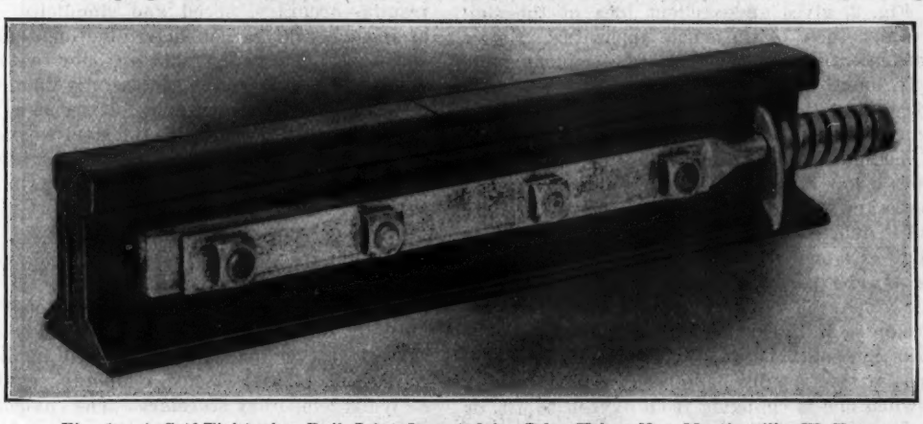

Fig. 1.—A Self-Tightening Rail Joint Invented by John Heber, New Martinsville, W. Va.

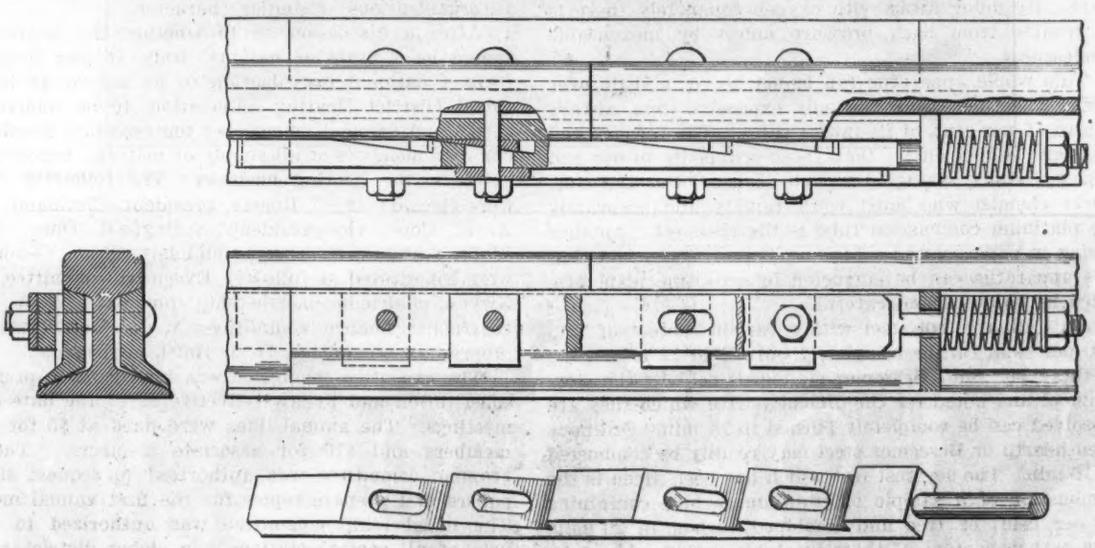

Fig. 2.—Details of the Heber Self-Tightening Rail Joint.

John Heber of New Martinsville, W. Va., has invented a device for use in connection with the ordinary rail joint, which is claimed to overcome all of the mentioned troubles. It is a device that may be compared to a gib in machinery, but for its adjustment is provided with a spring, so that it automatically takes up the play by keeping all the nuts set up tightly, holding the joint as rigidly, it is claimed, as though the rail were all one piece. Fig. 1 is a general view of the joint, and Fig. 2 shows details of its construction. Using the same fish plate and bolts and nuts as the ordinary joint, its only additional parts are four gibs, which go over each of the four bolts, a key, cover plate and a spring and nut for the key.

The gibs are square pieces formed to fit over the bolts and between the head of the rail and the base of the fish plate on the nut side. They are beveled and placed with their thick edges facing toward the spring end of the key. The key has four recesses beveled to present against the gibs inclined faces corresponding to those of the gibs and slotted where the bolts pass through it, so as to permit a given movement of the key longitudinally. The cover plate which fits over the flat outer side of the key has round holes just slightly larger than the bolts, and the regular nuts are made up against this cover plate. At the spring end of the key a lug is made to bear against the side and base of the fish plate, which has a hole through it for the projecting end of the key. The latter is threaded and has an adjusting nut, so that the tension on the spring tending to hold the key solidly against the inclined faces of the gibs may be regulated. In making up the joint it is usual, after first tightening all the bolts and then tightening the adjusting screw, to hit the key a few strokes with a sledge so as to set it up tightly, and the spring adjusting nut is again tightened. After the joint has been in service for about a month the parts will wear to solid bearing, and one more adjustment is usually enough to last as long as the rail.

A number of these joints have been in service and under test for a number of months. The New York Central has an experimental installation in its yards at the Grand Central Station, and the Interborough Rapid Transit Company has the joint under test on one of the elevated railroads, and is to equip a half mile of line for a more thorough test. It is reported that all of the tests so far made, and these in parts of track where the joints will get the severest use, have shown the joint to be perfectly satisfactory.

The Siegen Spiegeleisen Syndicate is reported to have sold 10,000 tons of 20 per cent. spiegeleisen for shipment to the United States during the current quarter.

The Crescent Variety Wood Worker.

In pattern shops where space is limited and where work is not large and bulky a combination machine, such as the Variety wood worker, made by the Crescent Machine Company, Leetonia, Ohio, is likely to prove especially advantageous. It is a jointer, borer, saw table, pole rounder, shaper and emery grinder, all in one machine. Unlike many combination machines it does not sacrifice in convenience by requiring too much time to change the machine from one use to another; it is not complicated; it does not require excessive floor space and it has strength sufficient for performing any of its various functions, as the weights of parts have not been reduced in order to combine the several different functions in one machine.

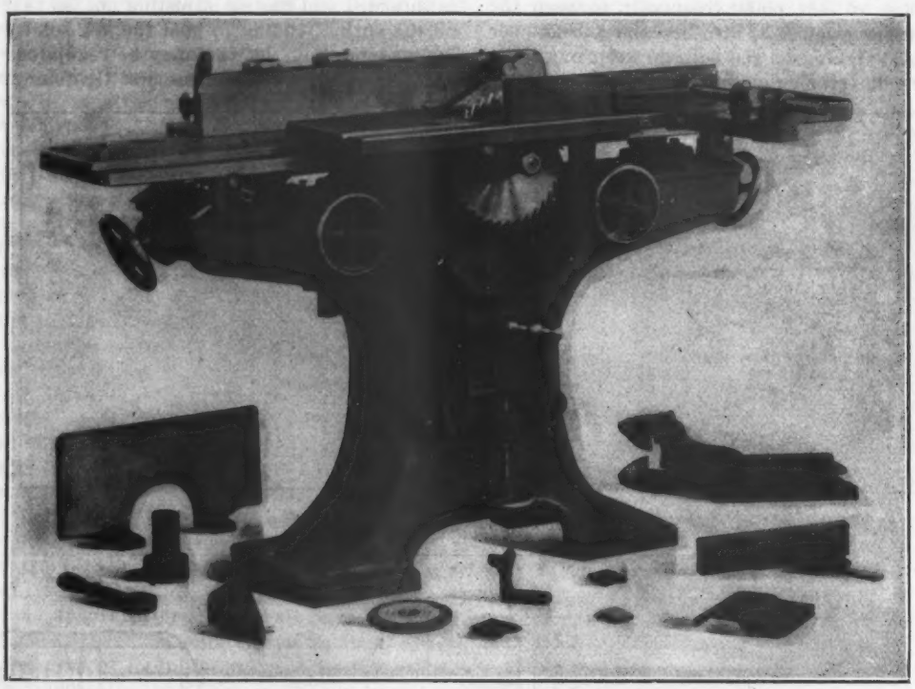

Fig. 1.—The Variety Wood Worker Built by the Crescent Machine Company, Leetonia, Ohio, Equipped as a Jointer and Saw Table.

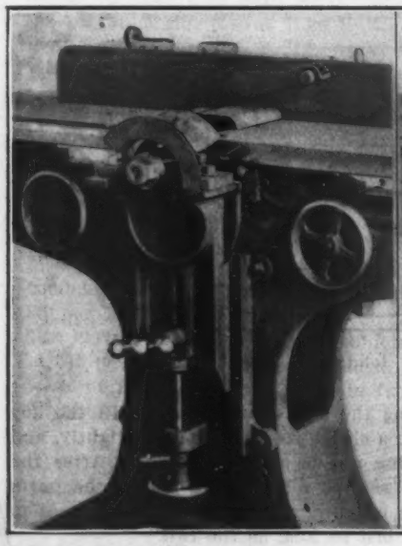

Fig. 2.—The Pole-Rounder.

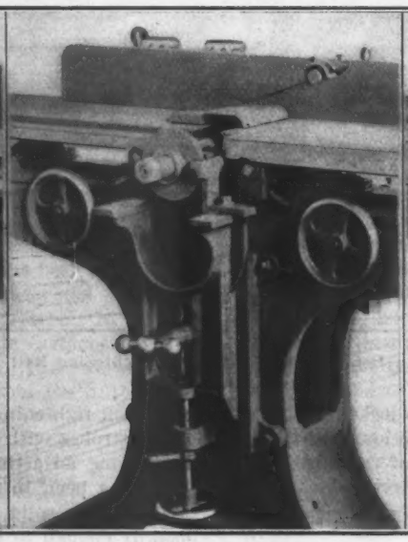

Fig. 3.—The Grinder.

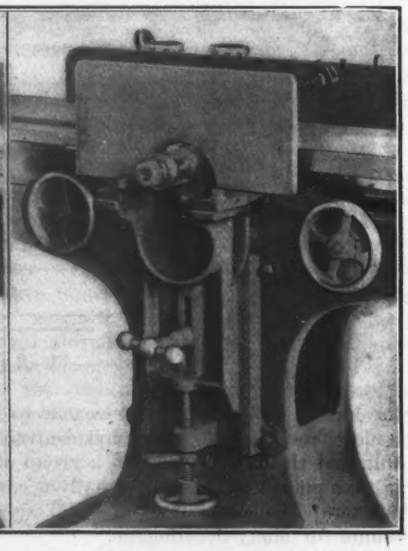

Fig. 4.—The Shaper.

Details of the Various Attachments

The machine, a general view of which is shown in Fig. 1, has for its body the regular 8-in. Crescent jointer, and in adding the various attachments its use as a jointer has not been impaired. A countershaft may be placed where most convenient—on the ceiling above the machine or under on the floor, or to the front or rear of the machine. Without making any changes or adjustments the machine may be used as a jointer, a borer and a saw table, and the three features are practically independent of each other. For example, one edge of a board can be straightened on the jointer, then it may be ripped to the desired width on the saw table and dressed on the other edge on the jointer, making a finished piece without stopping or making any changes on the machine. The change from the saw table to the pole rounder is easily and quickly made by raising the saw table to the extreme hight by the hand wheel to take off the saw, then removing one hand screw and setting the saw table aside. Then the knives may be put on where the saw was and the pole rounder put in place and fastened with a hand screw. There is no necessity of using a wrench in making the change, except for the mandrel, for which a wrench is furnished with the machine.

Fig. 1 shows the machine with the saw table attachment fastened to the front side. By means of a sliding yoke and hand wheel it is adjustable up and down in planed ways, and is held rigidly at any point by a hand screw. The table is 12 x 30 in. in area, is planed off true and has a wooden throat piece inserted in the top. This makes a convenient arrangement for sawing or for using groover or dado heads. Grooves of any exact depth may

be cut. A head 7 in. in diameter will cut grooves up to 1 in. deep. A saw 10 in. in diameter will cut through a piece 2½ in. thick. It is not intended to use larger saws, as the machine runs at too high a speed. Attached to the side of the table is an extension arm for holding the ripping fence. This arm can be attached to either side of the table, so that the fence may be used on either the right or left side of the saw. When used on the left side the jointer knife is left exposed so that the saw table and jointer may be used successively without making any adjustments. The fence will open to a distance of 12 in. from the saw. Graduations on top of the table and arm show the width being ripped. A sliding cut-off gauge is furnished that adjusts to any angle from 45 degrees right to left miter.

The pole rounder attachment supplied is shown in Fig. 2. It consists of a sliding yoke fastened to the same bracket and in the same manner as the saw table. It can be used at the same time with the jointer, so that a pole may first be straightened and dressed on the jointer and then run over the rounder to round off the corners. The knives used are fastened between grooved collars the same as the knives on a regular shaper spindle. The curved supports or guides above the knives are adjustable to suit knives of any radius, and serve to keep the work properly centered over the knives. They will work as well on curved or tapering stock as on straight stock, and as but one corner is cut at a time the knives are easy to keep in order and easily set. By using molding knives or straight knives the same arrangement will answer for chamfering corners of square porch columns or other similar work.

The emery grinder may be seen in the view given in Fig. 3. When the shaper table is removed a rest is fastened to the pole rounder yoke, then a small emery wheel is placed on the spindle, forming a convenient grinder for grinding cutters and other light work. Emery wheels larger than 5 in. in diameter are not intended to be used owing to the high speed of the machine.

Fig. 4 shows the shaper attachment. By removing the curved guides of the pole rounder the vertical shaper table may be attached in their place, thus adapting the machine for making edge molding and other similar work. The grooved collars will admit knives of any width up to 2½ in. The shaper table is 8 x 18 in., is planed true and has slotted holes to permit lateral adjustment. The spindle revolves only in one direction, so that slow feeding is necessary when cutting against the grain.

The borer is attached to a bracket on the rear of the machine, and may be seen in Fig. 5, where its adjustment need not be disturbed when using the machine for other purposes. The table slides on two steel shafts with stop collars to regulate the depth of the hole. It is made of wood 8 x 24 in., and has a horizontal travel of 8 in. The vertical adjustment by screw and crank is 5 in. The yoke slides on planed ways and has a gib for taking up wear. A self-centering chuck for holding the bit is furnished with the machine.

To cover running parts while they are in use safety guards are furnished. By the proper use of these guards the machine is rendered as safe as separate machines would be for doing the same class or classes of work. The safety guards are quickly set in place, two of them being held by dowel pins, and the third by one cap screw. A hold-down spring is furnished for use in the jointer fence for holding down work on the head. It may be used in various ways for special work, being useful when working small stock, such as light moldings or finished strips.

Fig. 5.—Rear View of the Variety Wood Worker, Showing Borer Attachment and Also Motor Drive.

The following are the more important dimensions: The tight and loose pulleys are 8 in. diameter by 3 in. face, and the speed of the countershaft is 800 rev. per min., giving the head a speed of 3650 rev. per min. The floor space over all is 58 x 64 in., and the weight 1125 lb. The equipment includes a countershaft, and for the jointer two 8-in. knives, fence, hold-down spring, steel wrench for knife bolts, collar guide and knife guard; for the borer a self-centering chuck; for the saw table a 10-in. rip saw, mandrel wrench, ripping fence, cut-off gauge, loose collars to fill the saw stub and a saw guard; for the pole rounder two pole guides, two 2-in. straight knives, two pairs of rounded knives for 1 in. and 1½ in. ranges, mandrel wrench, collars to fill the spindle; for the shaper a table, and for the grinder an emery wheel ½ x 5 in., and one grinding rest.

The International Harvester Company announces a comprehensive plan of profit sharing with its employees. The plan is similar to that of the United States Steel Corporation, and provides for a subscription to the stock of the company by the employees, to be paid for out of installments taken from their wages. The Finance Committee has set aside 12,500 shares of the preferred stock and 15,000 shares of the common stock of the company, the former being offered employees at $115 a share, which is about $6 under the present market price, and the common stock is offered at $75 a share, or about $10 under the market.

Steel Rail Defects.*

Dark Carbon Streaks in Segregated Metal in Split Heads.

BY DR. P. H. DUDLEY, NEW YORK CENTRAL LINES.

I have in former papers called attention to "split heads" in rails. See Vol. V, page 165, and Vol. VII, page 54, of the *Proceedings* of the American Society for Testing Materials. "Split head" has been distinctly recognized in the nomenclature of rail failures by the American Railway Engineering and Maintenance of Way Association, and is thus defined: "This term includes rails split through or near the center line of the head, or rails with pieces split off the sides of the head. When this term is used it should be further defined by stating whether it is or is not accompanied by a seam or hollow head." This was intended to be generic rather than specific as to types. A study of such failures is elucidated by the accompanying illustrations.

Fig. 1 shows a transverse section of the generic type of "split head" of rails. The spreading, wedge shaped piece of metal above the opening in the head it indicated by the cracks in the bearing surface over the split. The metal of the wedge contains slag inclusions (manganese silicates as deoxidation products) from the chemical reactions of the recarburizer to purify and make the steel while all of the traces of the deoxidation products did not have time to escape before the ingot was teemed into four length ingots for 100-lb. rails. The quality of the steel and the soundness of the ingots have been improved the past year or so by requiring more time for the deoxidation products to escape from the steel before teeming the ingots.

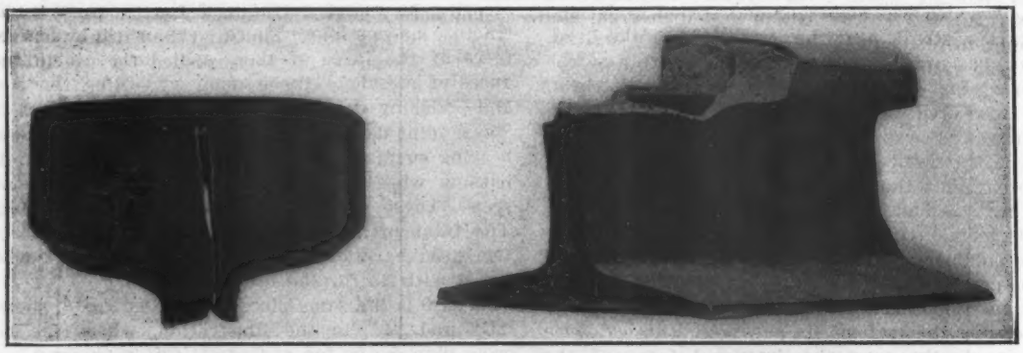

Fig. 1. Fig. 2.

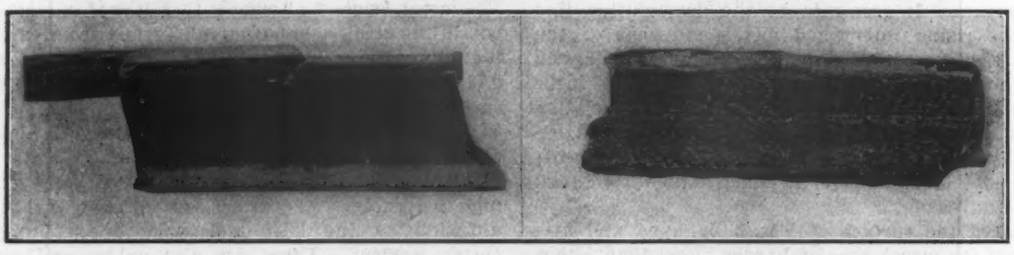

Fig. 3. Fig. 4.

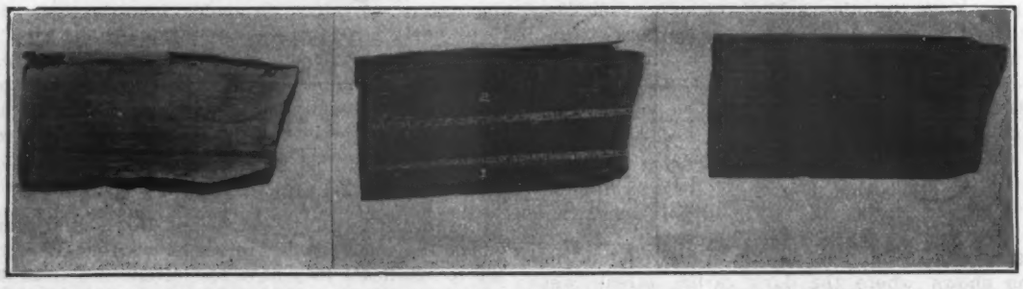

Fig. 5. Fig. 6. Fig. 7.

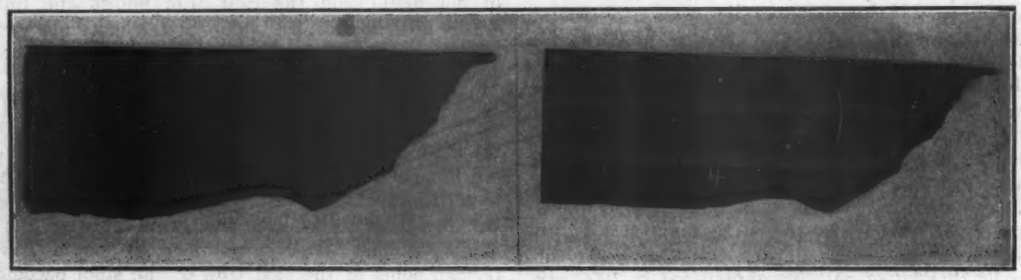

Fig. 8. Fig. 9.

A Study of Dark Carbon Streaks in Segregated Metal in Split Heads of Rails.

Fig. 2 shows in part by the dark discolorations an end progressive detailed fracture of the web and base from the top of the web downward after the head had split and separated at the junction of the web, also as a detailed fracture, the head separating from the web of the rail, reducing a single strong section into two weak sections, and failure is certain under a few thousand wheel loads, each extending the progressive fracture. The head was broken into several short pieces by the wheels of the train which was derailed. This was called a "piped" rail

* Paper read before the American Society for Testing Materials, Atlantic City, N. J., June, 1909.

by the trackmen, but the fracture shows the web was not split nor contained a trace of blowholes or shrinkage cavities at this location. This is not always the case.

Fig. 3 includes the same piece of web, base and head as Fig. 2, with the added portion of the broken piece from the head detached by the wheels. The one-half piece of the head projecting beyond the web contains a streak higher in carbon than the adjacent metal above or below it.

Fig. 4 is the inner face from the same split head, which indicates a dark carbon streak near the middle of the head.

Fig. 5 is also the same inner face from the same "split head" which was smoothed and etched to develop the dark carbon streak near the lower side of the head. This streak was practically in the same position as the one shown in Fig. 3, but all of the pieces of the head not being recovered the fact could not be established whether it was or was not a continuation of the same streak. The fractured surface of No. 5, when received, was so recent that the metal was discolored only and indicated that it had split in comparatively solid but segregated metal, confirming observations previously made and published. There were some indications of streaks on portions of the surface as proof that something had risen in the hot metal of the ingot before it had set, leaving the trail of its passage. This evidence is found frequently upon the fractured faces of the "split head," and is doubtless called a true seam by many observers. It seems to be the demarcation line between the rising interjected metal and that of the ingot, and easily becomes a cleavage plane of weakness. The steel did not set "dead," but the top of the ingot rose, forming a horn, or horns, with ejections of slag and impurities. An ingot with horns was cut and decided streaks found, while another was rolled into rails and sections and cuts made of them which contained many dark streaks.

I prepared the surface of Fig. 5 by hand and saw at once that the streak was of harder metal than either side, and that the bulk of the so-called segregation had detached itself from the other half of the split head. The etching defined a well developed dark carbon streak, though I had cut away over half of its thickness in surfacing the piece as shown in Fig. 5. Examination of the streak under the microscope indicated well defined longitudinal cracks and that the metal was checked or shattered transversely in service. The sclerescope measured a hardness from 57 to 60 for the streaks in comparison with 45 to 47 for the mass of the metal in the head.

Fig 6 shows the same piece as Fig. 5 and "1" in the illustration shows where the dark carbon streak was planed out for chemical analysis, which by combustion was 0.78, while "2" shows where the steel was taken for the ordinary content of carbon, which was 0.61 by combustion and 0.49 by color. The streak was cut out ⅛ in. wide and 1-16 in. deep to obtain sufficient material for a combustion test. These chips contain some material which was not colored, approximately one-third to one-half of the steel, the actual carbon being higher than the average reported. The highest content so far found in these dark carbon streaks in rails is 1.61 per cent. by combustion. The carbon in the strip marked "2" in Fig. 6 by combustion was 0.61 and by color 0.49; the ladle tests of this lot of rails manufactured in 1903 ran from 0.43 to 0.48 by color. The chemical analyses of the metal in the rail compared with the ladle tests indicated segregation of the setting steel, which is further augmented by the interjections of the dark carbon streaks. The sharp demarcation between them and the adjacent metal surrounding them precludes the hypothesis that these are the nuclei of the so-called segregates which, from the richer carbon content, cooled last. There are being accumulated samples which indicate a dissemination of the higher carbon to the adjacent metal by the heat and work of fabrication. The rail did not fail until five and a half years' service in the main line tracks, although many rails from the same lot failed as "split heads" after the second or third year of service. The rails of this brand were never lettered to mark their position in the ingot, and, while uncertain, there are many indications it was below the "A" rail of the top of the ingot. "Split heads" have been found in all rails of the ingot, though most frequent from the upper portion.

Fig. 7 is the same piece as Figs. 4, 5 and 6, after a reduction of 3-32 in. in depth of the face, which still shows slight impurity streaks, but not necessarily as high in carbon as the one cut out for analysis.

Fig. 8 is a piece of the "split head" from the "B" rail of a 1903 100-lb. "Dudley" section in a four-rail ingot. The rail was removed from the track as soon as indications of failure were noticed for the purpose of securing as recent surfaces of the progressive detailed fracture as possible. There were on the fractured surfaces of the faces of the "split head" slight appearances of streaks. These upon smoothing the specimen and polishing developed near the upper surface of Fig. 8 as a faint dark carbon streak. Immediately under the bearing surface, where the metal had spread under the passing wheel loads, two minute dark streaks may be seen. These did not show a high content of carbon. The faint broad carbon streak gave the indication of increased hardness by the sclerescope of 57 to 60 compared with 45 for the ordinary metal.

Fig. 9 is the same piece of steel as Fig. 8, showing by "3" and "4" in the illustration, where the portions were planed out for analyses. Cut "3" contained 0.72 per cent. of carbon by combustion and 0.61 by color. The metal below "4" shows that it was a mass of carbon in the steel, a broad streak turned from the web by the rolls. By combustion this showed 0.85 and by color 0.71. The under surface of this piece was so high in carbon that it detached quickly from the head of the rail in the track; a usual type of fracture. It is not intended to convey the idea that all of the dark streaks found in the heads of these segregated rails will show high percentages of carbon, as in many instances its diffusion by the heat and work of manufacture is clearly evident. There are also oxides and other impurities, which seem to be included in a central strip, the nature of which is under investigation. Finding these dark carbon streaks occasionally in the "head" shows that it is something which is injected irregularly into some, but not all of the ingots of every heat of steel. They are not found in all rails, but only in occasional rails. We are, therefore, not dealing with a constant segregation, but one of considerable irregularity.

How Cast Iron Gets Into a Steel Ingot.

Examination of the stools of No. 1 cast iron upon which the ingot molds are set shows that after teeming 100 to 120 heats they have lost oftentimes from 30 to 40 lb. of metal. The molds are also cut out by the stream of hot metal and the cast iron enters the fluid steel which is being teemed. The cast iron is not cut out of the stool under each ingot of every heat, but seems to occur when the steel is high in temperature and in falling from so great a hight (6½ to 8 ft.) it strikes the top of the stool with great severity and the ingots stick to the stool. The men teeming the ingots sometimes raise the stopper of the nozzle slightly to allow a little steel to fill the bottom of the mold before opening the nozzle full head. This checks the rapid cutting out of the stools, though after a number of heats have been teemed some of the cast iron of the stool becomes granulated and a portion is detached by the bottom of the ingot when stripped, if not by the falling stream. A new stool in the first heat often loses 2 or 3 lb. of metal, either cut out by the stream or from the hot ingot sticking to the stool.

Examinations were made of ingots from which there was not any trace of cast iron cut out by the falling stream in teeming the ingots of that particular heat, and dark carbon streaks were not found in the rail. Then a series of tests were made of casting small test ingots of 8 to 10 lbs. weight, the same as those used for determining the chemical contents of the steel. The small quantity of steel poured from a hand ladle in the small ingots rarely cuts out any of the cast iron, and those ingots are free from dark carbon streaks. Then the experiment

was made of introducing an ounce or an ounce and a half of No. 1 iron drillings in the small 8-lb. test ingot. The ingots are then cut in half, polished and etched, and dark streaks were found in the steel. These being tested by the sclerescope, measured a greater hardness than the adjacent steel surrounding it by 8 to 10 points. Small test ingots have also been made in which about 1 oz. or 1½ oz. of cast iron from a broken mold were used. These pieces were put into the small test ingot after about 1 in. of metal had been poured into them. One ingot was cut and traces of the dark carbon streaks found in it. Another ingot with about the same quantity of cast iron from the mold was drawn out in a bar 1 in. sq. and about 30 in. in length; this was then cut in half and polished, and the dark streaks were found in the interior of the bar. The cast iron caused the top of the test ingot to boil and form horns, as is often observed with the large ingots. The heat and work upon this small bar disseminated the carbon from the iron in streaks, so that the total quantity at any one point is small. It is well diffused each side of the small streak. The sclerescope shows a hardness of about 33 to 35 for the bar, and where the streaks of carbon are the heaviest the hardness runs from 43 to 48.

In Studying Segregation, Ingots Which Have Taken Up Cast Iron Should Be Avoided.

The segregation of the ingots follows laws which have been observed to some extent, but it is considered remarkable that in rail ingots the manganese only segregates to a small extent. The equivalent increase is not found in the carbon streaks for the possible reason that the cast iron only contains about one-half of 1 per cent. of manganese, and this would not increase the content of manganese more than a slight degree. I am now studying what I consider the normal segregation of an ingot which shows a fairly uniform segregation of all of the elements. The small quantity of material in the carbon streaks does not usually furnish sufficient for analyses of all of the elements. There is an increase in the segregation of the phosphorus which can partially be explained by the content in the cast iron, and also with the sulphur where it is injected into the steel. The accidental carbon streaks in rail steel render it difficult for the steel companies to prepare standards of uniform carbon content. The drillings taken from a bar in which these streaks are found will show decided irregularities under chemical analysis, even when drillings are taken from the same holes. It is difficult to secure a uniform sample owing to the fineness of some of the material; therefore, an average sample is not obtained. The facts now known in reference to the effect of these carbon streaks in the steel show that it will be better to take samples from ingots which have not taken up any cast iron from the stool, and these can be used to produce more uniform carbon standards. The carbon standards by color differ to a considerable extent at each mill, and the values are not the same, which is partly due to the irregularities of the carbon streaks which occur in the steel. The entire question of segregation will have to be carefully reconsidered and the tests should be made upon steel which has not taken up any of the iron from the ingot molds or the stools.

The different results obtained by persons studying segregation can in a measure be explained by either the absence of the carbon streaks in the steel or their presence. It requires but a small amount of cast iron, which contains 4 to 4.5 per cent. of carbon, to inject a large quantity in the interior of the steel. There are several instances in which the cast iron has not risen much above the crop of the bottom rail of the ingot. In other cases these streaks are found in the rails above the bottom, and sometimes they are only in the upper rails. The latter will occur when the steel is hot and there is ample time for the carbon to rise in the metal and in ingots which boil the carbon streaks and segregation is more decided than when the steel sets "dead."

The introduction of any deoxidizer which absorbs more of the oxygen of the steel and causes it to set more quietly will reduce the natural segregation of the metal. I have made 17,000 tons of rails with ferrotitanium, and in many of them there is not the slightest trace of carbon streaks, but if there is an ingot of a heat which has cut out a portion of the stool the carbon streaks appear.

Those rails which contained a percentage of the cast iron from the stool in the form of carbon streaks are among those which have broken most frequently in the track. Open hearth steel from the bottom poured ingots in which there is not any of the cast iron cut out from the stools has not shown carbon streaks.

In making these general experiments a great many samples have been examined, but not sufficient to cover the entire field of investigation at all of the different mills. Being a subject which has not heretofore received any consideration, it will be evident that the investigation must be large and sufficiently comprehensive to cover all of the possibilities which may occur in the teeming of the ingots.

The present attitude of the steel makers in reference to the consumer is that when facts are proved which have contributed to the unusual failures in rails they are ready to take steps to reduce these possibilities in the future.

One eminent maker after examining several of the dark carbon streaks in rails said that there was little question in his mind but that a great many of the difficulties attributed to segregation are at least augmented by the cutting out of the cast iron from either the stool or the ingot mold.

Tantalum as a Steel Alloy.

The London *Iron and Coal Trades Review* of June 11 presents an article entitled "An Investigation of Tantalum Steels," which gives a large number of photomicrographs of steel containing varying percentages of tantalum. The particulars contained in the article were furnished by George G. Blackwell, Sons & Co., Ltd., of Liverpool, England. The firm in question had a quantity of mineral containing tantalum smelted in the electric furnace, with a view to determining whether this metal would be of value to the steel manufacturer.

It is stated that the series of experiments with the direct use of tantalum in steel of various percentages of carbon appeared to prove that tantalum was a hardening metal similar to tungsten and molybdenum. These experiments were not altogether conclusive, owing to the variation in the quality of the steels made, and so it was decided to prove inferentially whether this was the case or not by the addition of tantalum to alloy steels, and to compare the results with exactly similar steels free from tantalum. This method was adopted, not only owing to the quantity of the varying quality of the steels, but also owing to the presence of a rare metal, probably niobium, in the alloy, which it was thought might also possibly be a cause of the somewhat erratic results obtained by the use of tantalum alone. An expert workman, especially selected for his skill, melted the steel and also cast the ingots himself. Every precaution was used to prevent contamination or undue exposure of the molten steel. The steel mixture was made up of the necessary alloys and Swedish iron. When it was necessary to raise the carbon percentage blister bar from cemented Swedish iron was used in addition.

The results given are comprised in 34 illustrations. With these are presented the chemical composition of each specimen, together with the details of mechanical tests. It is interesting to note that in most instances the mechanical tests showed a considerable improvement in the quality of the steel by the addition of the tantalum. The percentage of tantalum used in the course of these experiments varied from 0.43 to 1.69. The firm above named has reprinted the article in pamphlet form for distribution.

Alice Furnace of the Youngstown Sheet & Tube Company at Sharpsville, Pa., has been put in operation after being idle for more than a year. This company is now operating two blast furnaces at Youngstown, with a total daily capacity of about 1000 tons, while the Alice will make about 200 tons per day, all this metal being used at Youngstown. In addition to this product, the company is consuming large quantities of purchased Bessemer iron, secured from three or four furnaces in the Mahoning Valley under a long time contract.

The Production of Pig Iron in the First Half of 1909.

The *Bulletin* of the American Iron and Steel Association for July 20 contains the statistics of the production of pig iron in the United States in the first half of 1909. These statistics are complete, giving the production in detail by States and districts and the kind of fuel used. Comparisons are also made with previous periods. The table presented below has been reproduced from a supplement to the *Bulletin*, for which we are indebted to James M. Swank, general manager of the association, who has furnished it in advance of the regular issue:

PRODUCTION OF PIG IRON IN THE UNITED STATES IN THE FIRST SIX MONTHS OF 1909.

Statistics collected from the Manufacturers by The American Iron and Steel Association, all in Gross Tons.

Production in the First Half of 1908, 6,918,004 Gross Tons; Second Half of 1908, 9,018,014 Tons; First Half of 1909, 11,022,346 Tons.

Total Production of All Kinds of Pig Iron.

TOTAL PRODUCTION OF PIG IRON BY STATES.

States.	Blast Furnaces. In blast Dec. 31, 1908.	June 30, 1909. In.	Out.	Total.	Production—Gross tons. (Includes spiegeleisen, ferro-manganese, ferro-silicon, etc.) First half of 1908.	Second half of 1908.	First half of 1909.
Massachusetts	1	1	1	2	5,220	8,574	9,685
Connecticut	2	3	0	3			
New York	15	15	12	27	376,208	643,287	688,828
New Jersey	3	3	8	11	125,143	100,229	118,219
Pennsylvania	87	103	58	161	3,032,297	3,954,894	4,755,079
Maryland	2	3	2	5	82,785	100,717	115,260
Virginia	10	9	17	26	137,356	183,102	183,019
Georgia	2	1	3	4	5,260	19,085	10,101
Texas	0	0	4	4			
Alabama	25	19	32	51	605,617	791,397	800,708
West Virginia	1	3	1	4	27,901	37,650	63,200
Kentucky	2	3	5	8	21,357	23,739	49,580
Tennessee	12	9	12	21	115,249	175,577	152,628
Ohio	39	44	30	74	1,209,399	1,651,926	2,242,987
Illinois	14	19	6	25	782,865	909,079	1,057,874
Indiana	3	5	0	5	167,063	181,033	420,191
Michigan	8	7	7	14			
Wisconsin	4	5	2	7	69,303	79,635	171,277
Minnesota	1	1	0	1			
Missouri	2	2	0	2			
Colorado	3	3	3	6			
Oregon	0	0	1	1	154,981	158,090	183,710
Washington	0	0	1	1			
California	0	0	0	0			
Total	236	258	205	463	6,918,004	9,018,014	11,022,346

PRODUCTION OF BITUMINOUS COAL AND COKE PIG IRON.

New York	15	15	5	20	376,208	642,587	688,178
New Jersey	2	2	3	5	93,897	98,455	93,091
Pennsylvania	74	88	35	123	2,852,680	3,810,043	4,510,843
Maryland	2	2	2	4	82,785	100,717	114,860
Virginia	9	9	13	22			
Georgia	1	0	2	2	136,852	189,613	187,862
Texas	0	0	3	3			
Alabama	23	17	29	46	596,280	776,919	784,712
West Virginia	1	3	1	4	27,901	37,650	63,200
Kentucky	2	2	5	7	20,811	22,361	48,928
Tennessee	11	8	10	18	114,789	173,527	151,595
Ohio	38	44	24	68	1,209,399	1,649,526	2,242,987
Illinois	14	19	6	25	782,865	909,079	1,057,874
Indiana	3	5	0	5			
Michigan	2	1	2	3	135,814	*180,171	*440,358
Wisconsin	3	4	2	6			
Minnesota	1	1	0	1			
Missouri	1	1	0	1	148,089	162,845	197,967
Colorado	3	3	3	6			
Washington	0	0	1	1			
Total	205	224	146	370	6,578,370	*8,753,493	*10,582,455

* Includes a small quantity of iron made experimentally with manufactured gas.

ANTHRACITE AND MIXED ANTHRACITE AND COKE PIG IRON.

New York	0	0	5	5	31,246	144,595	268,502
New Jersey	1	1	5	6			
Pennsylvania	12	13	20	33	179,168		
Total	13	14	30	44	210,414	144,595	268,502

PRODUCTION OF CHARCOAL PIG IRON BY STATES.

Massachusetts	1	1	1	2	5,220	9,274	10,335
Connecticut	2	3	0	3			
New York	0	0	2	2			
Pennsylvania	1	2	3	5	449	2,030	862
Maryland	0	1	0	1	504	2,794	1,557
Virginia	1	0	4	4			
Alabama	2	2	3	5	9,337	14,478	15,996
Georgia	1	1	1	2			
Texas	0	0	1	1	6,266	13,208	5,786
Kentucky	0	1	0	1			
Tennessee	1	1	2	3			
Ohio	1	0	6	6	0	2,400	0
Michigan	6	6	5	11	82,105	61,387	103,733
Wisconsin	1	1	0	1			
Missouri	1	1	0	1	*25,259	*14,355	*33,120
Oregon	0	0	1	1			
California	0	0	0	0			
Total	18	20	29	49	*129,220	*119,926	*171,389

* Includes a small quantity of pig iron made with charcoal and electricity.

TOTAL PRODUCTION OF PIG IRON ACCORDING TO FUEL USED.

Bituminous	205	224	146	370	6,578,370	8,753,493	10,582,455
Anth. & anth. & coke	13	14	30	44	210,414	144,595	268,502
Charcoal	18	20	29	49	129,220	119,926	171,389
Total	236	258	205	463	6,918,004	9,018,014	11,022,346

Miscellaneous Pig Iron Statistics.

PRODUCTION OF PIG IRON IN PENNSYLVANIA AND OHIO.

	Districts.	Blast Furnaces. In blast Dec. 31, 1908.	June 30, 1909. In.	Out.	Total.	Production—Gross tons. (Includes spiegeleisen, ferro-manganese, ferro-silicon, etc.) First half of 1908.	Second half of 1908	First half of 1909.
Pennsylvania.	Lehigh Valley	12	13	13	26	221,867	248,593	310,058
	Schuylkill "	10	8	8	16	183,207	236,870	363,562
	L. Susq. "	6	8	11	19	121,159	155,378	251,939
	Juniata "	3	2	8	10	47,679	72,489	69,387
	Allegheny Co.	32	41	5	46	1,697,658	2,220,280	2,370,043
	Shenan. Valley	11	13	7	20	452,902	597,399	632,825
	Miscel. bitum.	12	16	3	19	307,376	421,855	756,403
	Charcoal	1	2	3	5	449	2,030	862
Ohio.	Mahoning Val.	13	17	5	22	546,618	695,466	977,596
	Hocking "	1	0	1	1			
	Lake Counties	9	10	4	14	435,655	614,637	605,357
	Miscel. bitum.	6	9	7	16	110,847	198,028	420,223
	H. R. bitum.	9	8	7	15	116,279	141,395	239,811
	H. R. charcoal	1	0	6	6	0	2,400	0

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

New York	163,984	319,916	285,882
Pennsylvania	1,521,277	1,547,738	1,640,469
Maryland and Virginia	83,162	100,717	114,860
West Virginia, Tennessee, and Kentucky	59,186	62,517	102,677
Ohio	814,505	1,093,024	1,516,212
Illinois	663,745	703,538	799,748
Wisconsin, Minnesota, Col., and California	82,632	1,035	21,642
Total	3,388,491	3,828,485	4,481,490

PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON IN PENNSYLVANIA AND OHIO BY DISTRICTS.

Pennsylvania.	Lehigh Valley	62,884	46,304	70,539
	Schuylkill Valley			
	Lower Susquehanna Valley	33,148	36,832	59,924
	Allegheny County	1,026,172	896,790	873,410
	Shenango Valley	399,073	567,812	636,296
	Miscellaneous bituminous			
Ohio.	Mahoning Valley	424,518	542,398	816,004
	Lake Counties	347,931	469,255	410,194
	Hanging Rock bituminous	42,056	81,371	290,014
	Miscellaneous bituminous			

PRODUCTION OF BASIC PIG IRON, NOT INCLUDING CHARCOAL IRON.

New York and New Jersey	51,371	58,796	76,411
Pennsylvania—Allegheny County	614,657	1,239,670	1,422,169
Other counties	372,212	471,323	817,880
Virginia and Alabama	177,229	273,524	181,603
Ohio, Indiana, Illinois, Missouri, and Col.	266,143	485,219	790,510
Total	1,481,612	2,528,532	3,288,573

PRODUCTION OF SPIEGELEISEN AND FERRO-MANGANESE.

Pennsylvania	52,532	50,167	58,407
Illinois and Colorado	32,961	16,358	22,378
Total	85,493	66,525	80,785

PRODUCTION OF ALL KINDS OF PIG IRON FROM 1904 TO 1908.

States.	Production—Gross tons of 2,240 pounds 1904.	1905.	1906.	1907.	1908.
Massachusetts	3,149	15,987	20,239	19,119	13,794
Connecticut	8,922				
New York	605,709	1,198,068	1,552,659	1,659,752	1,019,495
New Jersey	262,294	311,039	379,390	373,189	225,372
Pennsylvania	7,644,321	10,579,127	11,247,860	11,348,549	6,987,191
Maryland	293,441	332,096	386,709	411,833	183,502
Virginia	310,526	510,210	483,525	478,771	320,458
Georgia	75,686	38,699	92,599	55,825	24,345
Texas					
Alabama	1,453,513	1,604,062	1,674,848	1,686,674	1,397,014
West Virginia	270,945	298,179	304,534	291,066	65,551
Kentucky	37,106	63,735	98,127	127,946	45,096
Tennessee	302,096	372,692	426,874	393,106	290,826
Ohio	2,977,929	4,586,110	5,327,133	5,250,687	2,861,325
Illinois	1,655,991	2,034,483	2,156,866	2,457,768	1,691,944
Indiana	233,225	288,704	369,456	436,507	348,096
Michigan					
Wisconsin	210,404	351,415	373,323	322,083	148,938
Minnesota					
Missouri					
Colorado	151,776	407,774	413,040	468,486	313,071
Washington					
California					
Total	16,497,033	22,992,380	25,307,191	25,781,361	15,930,018

THE IRON AGE

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DAVID WILLIAMS, - - - - - PRESIDENT
CHARLES KIRCHHOFF, - - - - - VICE-PRESIDENT
RICHARD R. WILLIAMS, - - - - - TREASURER
GEO. W. COPE, - - - - - SECRETARY

CHARLES KIRCHHOFF - - - - - - - }
GEO. W. COPE, - - - - - - - - } EDITORS.
A. I. FINDLEY, - - - - - - - - }
RICHARD R. WILLIAMS, - - - - - - - - HARDWARE EDITOR.

The Iron Age Index.

The index to Volume 83 of *The Iron Age*, January 1 to June 30, 1909, will be mailed to subscribers applying for it. A list of those who have received the index heretofore is kept in this office, and to all such the latest one will be mailed without notice from them. Additional names will be put upon this list on request.

The Proposed National Demurrage Rules.

The Interstate Commerce Commission and the railroad commissions of 40 States have had under consideration for nearly a year the idea of a uniform code of demurrage rules, to be used throughout the United States on interstate and intrastate traffic. At a hearing in Washington in June the shipping interests of the country were given an opportunity to present their views of the desirability of such rules, and to discuss the provisions incorporated in them, and it is understood that the subject will come up for further consideration in the autumn at the annual meeting of the National Association of Railway Commissioners.

This movement, it is conceded, is in harmony with the development of recent years in the form of laws to regulate railroad and shipping interests. It is the inevitable tendency of governments to increase, from time to time, the scope of regulations over commerce and industry. Laws or regulations of this character are usually popular, and the growing national sentiment of the United States also supports any movement for uniform conditions throughout the country. A year and a half ago the American Railway Association formulated a code of "standard" demurrage rules, reviewed in *The Iron Age* at the time, which have since been adopted, with local amendments, by nearly all the local demurrage bureaus of the carriers. While the Interstate Commerce Commission has assumed jurisdiction over demurrage on interstate shipments to the extent of ruling that demurrage tariffs when filed with the commission must be enforced to the letter, it is doubtful whether the national commission has any real authority over this subject. Demurrage is a rental charge for the detention and use of the property of the railroad, and not a charge for transportation between two points. It never accrues excepting before or after a transportation movement, and is identical in principle with the "warehouse" charge which a railroad makes when a L.C.L. shipment is not removed from its depot or station by the consignee within the free time specified. If the United States Supreme Court, which has never passed upon this point, should hold that it is a charge for a warehouse service, neither the Interstate Commerce Commission nor Congress would have any jurisdiction to regulate it. Many of the State railroad commissions, however, have specific authority granted them by their legislatures to regulate demurrage charges. If a majority of the State commissions join hands with the Interstate Commerce Commission, and lend their authority for that purpose, a uniform or national code might be evolved which the railroads could enforce in all the States by printing them in tariffs and filing the tariffs at Washington. The movement, therefore, is one with formidable authority behind it.

Shippers and industrial traffic managers who have had the broadest experience in handling the problem of demurrage are opposed, as a rule, to any plan for an ironclad code covering the entire country, on the ground that conditions differ so widely in different localities, and between different industries, that it would be impossible to devise a uniform code that would fit every interest without hardship. Shippers in one locality need less free time than in other localities. Industries that are near the coal mines from which they obtain their fuel may not need more than two days' free time, but those at a distance from the mines need more time on account of delays in transit which "bunch" the cars. Plants which unload cars by machinery and have ample storage room need less time than industries in congested districts which have to unload their coal by hand labor. New England industries have four days' free time to unload coal, giving them four days' reserve supply on track to protect them against delays in transit, but in the Pittsburgh District many large industries which do their own switching take cars from the railroad, unload or load them, and return them within an average of two days for all the cars they handle. The "per diem" rules under which these Pittsburgh industries work have been adjusted to allow them only two days, while in Chicago and St. Louis the railroads allow an average of five days and the switching movements consume three and a half days of this time. It would be a waste of "car time" and a loss of efficiency to have a uniform rule that would detain a car five days in Pittsburgh for switching and loading or unloading, and it would be physically impossible to limit Chicago switching roads and industries to two days.

In the Pittsburgh and Valley Districts the rules which the carriers have voluntarily adopted allow an additional day of free time to blast furnaces for analysis after the car is loaded, and the consignee has the same free time to verify the analysis before accepting the car. This is a very necessary provision for blast furnaces and for large melters who require a particular analysis and cannot use anything else. The proposed national code contains no allowance for this necessity of the iron trade. Scores of cases like this might be cited where the local rules that are now in force have been adjusted to meet unavoidable local conditions.

The demurrage charge for the detention of cars was inaugurated by the railroads some 20 years ago for the sole purpose of protecting the carrier against "abuse of equipment" by shippers or consignees. Until rules were established and car service associations were organized to enforce them, cars were often detained for weeks or months by unscrupulous shippers or consignees. Well managed, progressive railroads have never enforced these rules for any other purpose than to protect themselves and other shippers against this abuse. It has been the general custom to waive or refund demurrage whenever

the shipper was not at fault for the delay; but the rules have been made tight enough to cover shippers who are more diligent in making excuses than in unloading cars. In some districts martinet managers of car service bureaus have made a great deal of trouble by trying to enforce printed rules to the letter, and a few railroads with the same kind of management have taken advantage of shippers who were not at fault. On the whole, however, shippers and railroad officials who are fair on both sides have had little trouble in getting along together under the local rules that are now in force.

The eminent commissioners, State and national, who have interested themselves in this question, have failed to understand the most important fact underlying the question of demurrage. The printed rules throw but little light, to the uninitiated, on the actual practice. The printed rules have been made for the occasional unscrupulous shipper, while the actual practice has been worked out to avoid hardship for the multitude of shippers. The Interstate Commerce Commission has assumed that whatever is printed in a tariff and filed at Washington is "law" and must be enforced to the letter, and the new code of proposed rules has been based upon the letter of the old rules rather than upon the practice of fair railroad officials and shippers. In a notable case the commission held that where a flood had made it impossible for shippers to unload cars they must pay demurrage; thus denying them relief for a hardship resulting from an act of God. It is probable that no railroad ever knowingly attempted to collect or retain demurrage under the old practice, in case of a flood or any similar occurrence that was beyond the control of the shipper. This case is suggestive of the difficulties and hardships that will arise for the shipper, if a uniform code of rules, based upon the letter of the old rules rather than upon prevailing practice, is enacted into law which must be enforced to the limit.

It is the small shipper who is chiefly interested in the demurrage question. Large industries, handling scores or hundreds of cars in a day, pay but little demurrage, and hold but few cars over the free time, because their large operations create an average which seldom exceeds the capacity of their crews of men who unload or load cars. The shippers whose operations are on a smaller scale are the ones who suffer hardship, whether in a large congested city or in a smaller town where they have to deal with an agent who is a martinet or incompetent. They do not have the time, and cannot afford the expense, for trips to Washington or other places to appear before tribunals where demurrage rules are discussed and formulated.

It is incomprehensible to the average small shipper why commissions and Legislatures, State and national, should be so greatly interested in protecting the railroad against the shipper. The detention of cars by shippers during the past 20 years has interfered but little with the efficiency of the carriers. The delays of cars and shipments in transit, however, have caused large losses to individual shippers, and have lowered enormously the efficiency of equipment at times when good service is most needed. Freight cars in steady service average a distance of only 25 miles per day. After a car is loaded and tendered to a railroad, it is only in motion a quarter of the average time that elapses before it reaches the consignee. If a car is delayed by a flood, an accident or any other cause that could not be foreseen and avoided by prudent management of a railroad a shipper would be deemed unreasonable if he demanded damages for the delay, and the law denies him any right to recover the value of the goods if they are destroyed by an act of God. So long as the carriers are permitted to seek the lowest cost in the movement of freight, regardless of delays in transit that may result from excessive measures of economy, it is difficult to understand why national and State government should be so interested in hunting down the small shipper, who, for reasons beyond his control, is unable to unload a car, or a "bunch" of delayed cars, within the time prescribed by the letter of a demurrage rule. The matter is certainly one in which national uniformity would work injustice to many shippers.

A Public Power Service Precedent.

The Massachusetts Gas and Electric Light Commission has laid down a principle which establishes an important precedent in cases where there is conflict between an existing electric power distributing corporation and a new company which has developed water power and proposes to transmit electricity into the territory and sell the power in competition at a lower price. Naturally, companies of this character resent the intrusion of a newcomer, and it must be conceded that their capital, in many cases originally invested in the spirit of civic enterprise with doubtful hope of adequate profit or even safe return, is deserving of some special consideration. Looking at it, however, from the industrial viewpoint there are many communities where the availability of cheaper power means industrial expansion and increased local prosperity, and where there will be criticism of the rule laid down that a new company shall be excluded, except that it may supply customers using not less than 300 hp.

The case in question involves the cities of Worcester and Fitchburg, Mass., and various neighboring towns, the decision relating specifically to Fitchburg. The Connecticut River Power Company, which has developed some 20,000 hp. on the Connecticut River, had been given the right by the local authorities to enter the city with its wires. The State law permits of appeal to the Gas and Electric Light Commission, advantage of which was taken by the local electric light company. This corporation has 62 power customers, two of them using over 200 hp. each and one over 300 hp. The commission holds that if the new company were to serve small customers it would have to put in so much more apparatus that its prices would not be appreciably less than those of the Fitchburg Company, while it can serve large customers much more cheaply. The decision goes on to say:

> For the reasons indicated it would seem that, under the present conditions at least, the two companies interested in this decision are not natural competitors for every class of power business in Fitchburg; in other words, it is extremely doubtful if the Fitchburg company is in position to profitably undertake to supply large power users, and, on the other hand, it is equally doubtful whether the transmission company can undertake to give the same advantages to both small and large users of power. As the hearing progressed, a recognition of these important facts by the transmission company was developed.
>
> With its investment for distribution already made and ample for the purpose, and with only a minimum of its distribution costs necessarily incident to the power supply, the Fitchburg company has every facility for distributing power at a minimum cost. For this reason, and in the interests of small users, the transmission company should be willing to sell to the Fitchburg company, which in turn should be willing to buy all the power which the former may have available for the purpose and be willing to sell at a less price than the latter company can make it.
>
> In the opinion of the board both companies, serving respectively the large and small users of power under conditions stimulating to each, but not disastrous, and operating independently in other respects, may reasonably be required, upon terms and under conditions advantageous to the public, to avoid the disadvantages necessarily incident to duplicate systems of transmission and to combine their wires into

a single line for the purpose of the distribution and sale of current. Details of the arrangements necessary to carry out these suggestions may be made the subject of a contract between the companies, each reserving to itself those things which it can most efficiently perform.

Finally the decision fixes the line between small and large consumers at a rated capacity of 300 hp. and an annual consumption of not less than 450,000 hp. hours. The Connecticut River Company is given permission to maintain its system in Fitchburg, and to sell its electricity to the Fitchburg Gas & Electric Company and to railroads, but forbids "direct or indirect" supply to consumers below the limit mentioned.

The application of this decision is especially strong in the older communities, in which local capitalists founded electrical plants, most of them using steam exclusively, before water power had entered upon its present very rapid development, which has resulted largely from the great strides made in the science of long distance transmission. The ruling must work out a discrimination in favor of the large users of power and against those that come under the 300-hp. limit. The expression "indirect supply to consumers" may eliminate the possibility of sale to industrial buildings, filled with small shops and factories which in the aggregate would come within the limit of the large consumer. These communities of interest are becoming common in both large and small manufacturing centers, and are particularly deserving of encouragement for the reason that among them are the beginnings of great industries. Probably many engineers will doubt the premise of the decision that the hydraulic company cannot furnish power to individual small consumers more cheaply than the local steam plant. In some cases, because of unusual conditions, such as remoteness, the point may well be taken, but in neighborhoods where manufacturing buildings are assembled in groups the single feed wire will serve in much the same manner as with a series of residences. Again, the question is not wholly what the local company can supply power for, but what it actually charges when it has no competition to meet. It will be a matter of regret if State or city authorities place obstacles in the way of manufacturers who are striving to reduce their costs that they may compete in the general market on the most advantageous basis. Instead of this, the policy should be one of broadness and liberality, especially in inland communities far removed from coal fields, where the cost of power is frequently a serious hindrance to industrial progress.

It is most gratifying to learn of the increasing use of *The Iron Age Directory* which is being made by purchasing agents. Recently a purchasing agent in a line hitherto unsuspected of employing this publication expressed his high appreciation of its value. He stated that he makes constant use of it, notwithstanding the fact that he is well supplied with so-called standard lists of manufacturers. He prefers, however, to use *The Iron Age Directory*, because he knows that every name in it is that of a live concern, prepared to do business as soon as communicated with.

C. W. Leavitt & Co., 30 Church street, New York, agents for the Girod electrical furnace, report that they have just signed a contract to install a furnace with an American plant. In Europe a license to operate the Girod furnace and process has been taken out lately by the Gutehoffnungshuette of Oberhausen for a 5 to 6 ton furnace and by the Stahlwerk Becker of Crefeld, Germany, for three 5 to 6 ton furnaces. These are additions to the list of eight plants in France, Switzerland, Austria, Germany and Belgium.

CORRESPONDENCE.

The Distribution of Pay Envelopes in Factories.

To the Editor: The editorial in *The Iron Age* of July 15 on "The Distribution of Pay Envelopes in Factories" meets with my full approval and I cannot help writing to you on the subject. In my "working" days this was one of the greatest humiliations in some shops —to "stand in line" and wait 30 to 45 minutes for my hard-earned money. You are right. Half of all labor troubles are brought about by mean, contemptible ignorants in offices, who never knew of nor care for a workingman's feelings.

MACHINE TOOL MANUFACTURER.

CINCINNATI, Ohio, July 16, 1909.

The McKinnon Chain Company.

The McKinnon Chain Company has been incorporated at Buffalo, N. Y., with a capital stock of $1,000,000, to manufacture chain by means of automatic machinery, under the patents of Lachan E. McKinnon. This is a new method, which permits the lap welding of chain electrically, something which has not heretofore been accomplished. Prior electric welding processes for chain have all been developed under the idea of butt welding; the McKinnon process produces perfect lap welded chain with the electric current on automatic machines. Each weld is swelled to a larger diameter than the original stock, and it is claimed to be very much stronger than either the old method of fire welding or the electric butt weld, especially for the lighter sizes of chain.

The McKinnon Company has been manufacturing both lap welded and butt welded chain by the new process at its Canadian works, St. Catharines, Ont., for a year or two and has the process thoroughly tested and perfected. The new incorporation is for the purpose of supplying the United States market. The incorporators of the company are Lachan E. McKinnon, Robert L. Notman and William A. Notman, who are respectively president, vice-president and secretary of the McKinnon Dash Company. The headquarters of the new company will be in Buffalo, and arrangements are now being made for the establishment of a manufacturing plant.

A Pittsburgh Coal Contract for Italy.

The Keystone Coal & Coke Company, Pittsburgh, has sold 50,000 tons of Pittsburgh coal to the Italian Government to be used in the royal navy. Shipment will be made from Baltimore, where eight vessels with a capacity of 6500 tons each are being loaded. This is one of the largest contracts of its kind ever awarded to Pittsburgh concerns, and it is expected that other foreign countries will open negotiations shortly with Pittsburgh coal companies for fuel for their navies.

The mines of the Keystone Coal & Coke Company are located in Westmoreland County, Pa., and all rail shipments are to be made over the Pennsylvania system. Robert K. Cassatt, son of the former Pennsylvania Railroad president, is general Eastern agent for the company, with headquarters in New York. The same company also has a contract for delivering 1000 tons of coal daily to a large interest at Ashtabula, Ohio, during the navigation season on the lakes, approximating 100 days. It has recently opened an office in the Birkbeck Building, Toronto, Canada, in charge of J. O. Sharp, formerly Western sales agent of the Harbison-Walker Refractories Company, Pittsburgh. The Keystone Coal & Coke Company operates in all 15 mines, located near Greensburg and in the mountain sections of Pennsylvania, and all are running full time.

The Connecticut River Power Company has completed its plant, the reservoir between Vernon, Vt., and Hinsdale, N. H., furnishing storage capacity. Among those who have engaged power is the American Steel & Wire Company, at Worcester, to the extent of 6000 hp.

The Progress of Tariff Revision.

WASHINGTON, D. C., July 21, 1909.—The announcement by President Taft of his desire that the new tariff law shall represent a general downward revision of the Dingley act and shall reflect a policy of free raw materials, including free iron ore and free coal, has upset the calculations of the Conference Committee, which has now had the bill under consideration for 10 days, and has introduced an element of uncertainty as to the most important features of the measure, including the metal schedule, that is causing the Senate leaders no little embarrassment.

Free Iron Ore Proposition.

The President's declaration in favor of free iron ore, which was provided by the House bill but for which the Senate substituted a rate of 25 cents per ton, has created consternation among the leading protectionists of the Senate and has resulted in the organization of a faction pledged to oppose the entire free raw material programme. Chairman Aldrich of the Finance Committee, upon whom devolves the necessity of securing the votes necessary for the adoption of the report of the Conference Committee, has told the President very frankly that he cannot obtain a majority in the Senate for a bill embodying the proposed free list, and has suggested that the Chief Executive will have to win over half a score of prominent Republicans if his ideas are to be carried out. The President has undertaken the task and expresses confidence of ultimate success; indeed, he has already made considerable progress, and, while the issue is still in doubt, indications point to the free listing of iron ore, the acceptance of a small proportion of the House rates throughout the metal schedule and a material reduction in the existing duty on coal.

The President's efforts to secure free iron ore have been supplemented by those of the principal steel manufacturers whose plants are located at tidewater or within a short distance thereof. The Conference Committee has before it a letter from Charles M. Schwab of the Bethlehem Steel Company, urging free iron ore, and declaring that unless the duty is removed the mills of the Atlantic seaboard will ultimately be driven into bankruptcy. Senators Elkins and Scott of West Virginia and Burrows and Smith of Michigan are stubbornly opposing free iron ore, and the President's effort is being directed to bringing them into line. The Michigan Senators disclaim any interest in the welfare of the United States Steel Corporation, asserting that they are concerned only for the small owners and operators of ore lands, who will be seriously crippled in the event that the duty is removed or reduced below 25 cents per ton. The Pennsylvania Senators appear to occupy a neutral position.

The difficulty of determining the disposition to be made of iron ore naturally has operated to prevent the settlement of many of the items of the metal schedule. It may be said, however, that the outlook favors the adoption of the bulk of the Senate rates without regard to the ore duty.

Compromise on Scrap Iron and Steel.

Some of the most important items of the schedule have been acted upon. After a spirited discussion the Conference Committee adopted a compromise rate of $1 per ton on scrap iron and steel (paragraph 116), which the House placed at 50 cents per ton, but which the Senate increased to $2.50. It is believed that this rate will stand without regard to the ultimate disposition of iron ore.

The Senate rates on structural steel (paragraph 119) have been adopted. Such steel, if valued at $18 per ton or less, will pay 3-10 cent per pound, and if valued above that figure 4-10 cent per pound. If punched or fitted for use the rate will be 45 per cent. ad valorem under the basket clause of the metal schedule. The House had adopted a flat rate of 3-10 cent per pound on all structural steel.

Both houses having agreed to a rate of 7-40 cent per pound on rails of iron or steel (paragraph 124), that rate is binding on the Conference Committee, which has no jurisdiction over items representing the concurrent action of the House and Senate. The Senate rate of 3-10 cent per pound on railroad fish plates or splice bars of iron or steel, provided for in the same paragraph with rails, has been adopted.

Wire nails (paragraph 160), which caused much contention in both House and Senate, have finally been disposed of on a compromise basis. These articles are divided into two classes, those 1 in. in length or longer and those less than 1 in. in length. On the larger sizes the House fixed a rate of ¼ cent per pound, which the Senate increased to ½ cent; the conferees have adopted a rate of 4-10 cent. On the smaller sizes the House rate was ½ cent and the Senate ¾ cent per pound; the conference has accepted the Senate rate.

Ferroalloy Rates Undetermined.

The disposition of ferroalloys (paragraph 182) has not yet been determined. As foreshadowed in this correspondence, the Conference Committee regards itself as limited in the revision of this paragraph to the extremes of the rates adopted by the two houses, and as both provisions are so high as to be entirely unsatisfactory to the independent steel producers the outcome promises to be disappointing. It is understood, however, that the conferees will feel at liberty to make changes in the classification of the ferroalloys so that those of higher content will take lower rates than were provided by the Senate bill.

Administrative Provisions.

The conferees have practically agreed to accept the Senate provision embodying a maximum and minimum section for the protection of American commerce against discrimination of any kind. The chief differences between the House and Senate maximum and minimum features are, first, the retaliatory rates of the Senate bill apply only to the dutiable schedules of the proposed law, while those of the House include a very large percentage of the free list; and, second, the maximum rate adopted by the Senate represents an addition of 25 per cent. ad valorem to the general tariff rate, while that of the House is 20 per cent. of the minimum rate of the duty rather than of the value of the article.

The difference in the retaliatory rates of the two measures is much greater than would appear at first glance. Taking, for example, an article paying 50 per cent. ad valorem and applying the Senate maximum of 25 per cent. ad valorem, there would be a retaliatory rate of 75 per cent. ad valorem, while upon the same article under the House provision the increase would be put 20 per cent. of the existing duty of 50 per cent., or an addition of 10 per cent., making a total retaliatory rate of 60 per cent. ad valorem. Notwithstanding this marked difference, however, the Senate provision has commended itself to the conferees chiefly upon the recommendation of President Taft, Secretary of the Treasury Knox and Senator Root, formerly Secretary of State. While the rate of the Senate substitute is higher than the House provision it has been pointed out that if retaliation is necessary half measures usually prove inadequate. It is further urged on behalf of the Senate provision that the elimination of the free list from the operation of the retaliatory rates will prevent the embarrassment that might ensue should it become necessary at any time to impose retaliatory rates of duty on articles the importation of which is necessary to certain American industries. In many cases our entire supply of a given raw material is derived from a single source and to impose retaliatory rates thereon would be to punish our own people rather than those of the country discriminating against our commerce.

Maximum and Minimum Provision.

The Senate maximum and minimum provision, as it will probably go into the new law, reads in part as follows:

Sec. 2. That from and after March 31, 1910, except as otherwise specially provided for in this section, there shall be levied, collected and paid on all articles when imported from any foreign country into the United States, or into any of its possessions (except the Philippine Islands and the islands of

Guam and Tutuila), the rates of duty prescribed by the schedules and paragraphs of the dutiable list of section one of this act, and in addition thereto 25 per centum ad valorem, which rates shall constithute the general tariff of the United States: *Provided*, That whenever after March 31, 1910, and so long thereafter as the President shall be satisfied, in view of the character of the concessions granted by the minimum tariff of the United States, that the government of any foreign country imposes no terms or restrictions, either in the way of tariff rates or provisions, trade or other regulations, charges, exactions, or in any other manner, directly or indirectly, upon the importation into or the sale in such foreign country of any agricultural, manufactured or other product of the United States, which unduly discriminates against the United States or the products thereof, and that such foreign country imposes no export bounty or prohibition upon the exportation of any article to the United States which unduly discriminates against the United States or the products thereof, and that such foreign country accords to the agricultural, manufactured or other products of the United States treatment which is reciprocal and equivalent, then, after proclamation to this effect by the President of the United States, all articles when imported into the United States, or any of its possessions (except the Philippine Islands and the islands of Guam and Tutuila), from such foreign country shall, except as otherwise herein provided, be admitted under the terms of the minimum tariff of the United States as prescribed by section one of this act.

General Countervailing Section.

The conferees have also decided that the general countervailing provision of the Dingley act providing for the assessment of additional duties upon articles upon which export bounties are paid by the countries of origin shall be reproduced in a but slightly modified form in the new law. In the closing hours of the debate in the Senate the countervailing section of the House bill, after having been stricken out, was restored; the provision thus being identical in both House and Senate measures, the conferees have decided that it cannot be changed without departing from long established precedents. Countervailing rates are limited in this provision to articles in the dutiable schedules and do not apply to any product on the free list.

A strong effort has been made by the represenattives of a number of industries the products of which are on the free list to induce the Conference Committee to amend this section so as to provide that countervailing duties may be assessed upon bounty aided articles even though they may be included in the free list, but it is not believed that the bill can now be modified so as to carry out this project. The fact should be borne in mind in this connection that the general countervailing provision has no relation to the maximum and minimum section of the bill, and would be applied independently thereof, and further, that it does not apply to nor conflict with those provsions of the bill which provide specifically for the collection of countervailing duties as to particular kinds of merchandise under certain circumstances.

The Drawback Problem.

No one of the administrative features of the bill has received more careful attention at the hands of the Conference Committe than the drawback section, but it has not yet been practicable to give it its final form. The House passed an elaborate provision, but certain of its terms were open to criticism, and the Senate leaders are opposed especially to that feature which waives identification in accordance with the principle of the French drawback law. The plans of the Finance Committee with respect to drafting a drawback provision before the bill was acted on by the upper house were changed repeatedly, and the bill, as finally passed, struck out the House drawback section, but did not provide a complete substitute, the measure carrying only two wholly inconsistent provisions, one of which denied drawback to wheat, wheat flour and flaxseed and the products thereof, while the other allowed rebate of duty paid on imported hoop or band iron used in the baling of cotton and commonly known as cotton ties. Since the adoption of these two provisions, much missionary work has been done here by the representatives of industries that would be injuriously affected if the Senate provisions only should become law, and it is now believed that the Conference Committee will adopt a fairly comprehensive drawback section, although it probably will not embrace the substitution feature of the House bill.

Smelting in Bond.

The Conference Committee is now working upon a careful revision of Section 29 of the Dingley act, known as the bonded smelting provision, which has long been regarded as antiquated. This section permits importers of lead ores, for example, to smelt them in certain specified establishments without payment of duty under bond conditioned upon the exportation of 90 per cent. of the metallic content of the ores. Under the present law, however, if this lead is withdrawn for consumption from the bonded smelter and duty paid thereon, the consumer using such lead in the manufacture of goods for export can receive in the form of drawback only 90 per cent. of the duty instead of 99 per cent., as under the general drawback statute in the case of imported pig lead. The result has been to discourage the smelting of imported lead ores and to stimulate the importation of pig lead. It is believed that in remodeling the smelting section there will be some reduction in the 10 per cent. allowance for waste, which the Government claims to be excessive, and that it will be provided that manufacturers using such lead after paying the duties thereon may receive the full 99 per cent. in the form of a drawback upon the exportation of products made therefrom.

The Customs Court.

The House conferees, after carefully examining the provision creating a customs court for the adjudication of all controversies arising under the tariff law and the administrative statutes, which was added to the bill by the Finance Committee, have accepted it with a few changes, including an amendment restoring the salaries of the members of the court to $10,000, the figure fixed by the Finance Committee, but which was subsequently reduced by the Senate to $7000. The itinerary of the court has also been expanded so as to include a number of places not provided for in the original provision.

W. L. C.

The Page Woven Wire Fence Company.

The Page Woven Wire Fence Company, Monessen, Pa., manufacturer of wire rods, wire and wire nails, will start at once to build another 60-ton stationary basic open hearth furnace, which will be a duplicate of the one built last year. The work will be done entirely by the organization of the plant. The company expects to have the furnace in operation in about six months. When completed it will make the steel capacity of the plant equal to its rod mill capacity. A rod mill conveyor is being installed, which takes the bundles of rods from the reels in the rod mill and conveys them in an underground passage to the cleaning house. This work has heretofore been done by an electric crane, but it is now the intention to remove the crane to the yards, where it will be used in connection with an electric magnet to handle scrap for the open hearth furnaces.

The extension in progress in the galvanizing and special process department is proceeding to completion rapidly, and it will soon be ready to take care of the increasing demand for Page fencing and other high grade products furnished by the company. The new improvement will not very largely increase the number of employees, but is expected to insure steady operation.

The Union Switch & Signal Company, Swissvale, Pittsburgh, received more orders for its equipment in June than in any one month in the past two years. The company is now employing about 1200 men full time, while a year ago only 700 men were working four days a week. It is now equipping its new brass foundry and blacksmith shop, and expects to equip its new iron foundry in a short time.

The T. H. Prest Supply Company, 1928 Grand avenue, Kansas City, Mo., has been appointed sales agent for the Follansbee Brothers Company, Pittsburgh, and will carry a stock of the four leading brands of Follansbee roofing tin, Scott's Extra Coated, Follansbee Banfield Process, Old Reliable Redipped and Follansbee Security.

The Labor Troubles in the Iron Trade.

Paradoxical as it may seem, the return of prosperity in the iron trade and the starting up of plants that have long been idle have resulted in labor disturbances, especially in the Pittsburgh District. Some of these disturbances have already been accompanied by bloodshed and the present situation, notably at the steel car plants of the Pressed Steel Car Company and the Standard Steel Car Company, is serious.

For many months the two steel car plants of the Pressed Steel Car Company, one in lower Allegheny and the other at McKees Rocks, were practically closed, as there were few orders for cars. In the spring months the company commenced to receive some fair sized car orders, and its newer and larger works at McKees Rocks were put in operation to partial capacity; it has recently been running nearly full, about 4000 to 5000 men being employed. As the labor is of an intricate kind no standard daily rates of wages are in vogue, the men working mostly on what is known as the "pooling" system—that is, certain gangs of men were paid a lump amount for doing a certain amount of work, this sum being divided among them. The men, most of whom are foreigners, have been complaining for some time that their earnings were much smaller than they should be, claiming that, in many cases, their wages would not be over 10 cents per hour and for fairly skillful work.

The company had been asked several times to do away with the pooling system, but refused, and on July 13 about 600 men, mostly employed in the riveting departments, went on strike. The trouble quickly spread to other departments, and in two days the entire plant was shut down and a condition of riot and disorder existed. Attempts made to start work were frustrated by the strikers, and threats were made that the whole works would be blown up with dynamite. The company appealed to the sheriff of the county for protection to its property, and the plant has been guarded for some days by a troop of State constabulary and deputy sheriffs. Several conflicts have taken place between the strikers and the guard and a number of men have been injured.

President F. N. Hoffstot has issued a statement in which he claims that the pooling system of paying the men has been in effect for four or five years and that it has worked successfully. He denies strongly that any of the men have been working for as small an amount as 10 cents per hour. He also denies that the Pressed Steel Car Company is in any way identified with the Presston Supply Company, from which the men buy their provisions and which they declare charges them much more than the regular market rates. He concludes his statement with the assertion that the plant will be in operation this week; that most of the men desire to return to work but are afraid to do so, owing to threats of violence made by the strikers. On Monday an attempt was made to start the plant, but only a few men reported for work and it was not successful. The men have made a proposition to arbitrate the trouble, but the company refused, saying there was nothing to arbitrate.

The Standard Car Company's Strike.

Only a few days after the trouble started at McKees Rocks similar trouble broke out among the employees of the Standard Steel Car Company at Butler, Pa., and practically that entire plant was closed. The men claim they also are unable to earn what they should for the work they do, and that repeated requests made to the company for a conference to adjust the troubles have been ignored. On Tuesday a settlement was effected, both sides yielding some points.

The Youngstown Sheet & Tube Company Decides to Run Its Sheet Mills Open Shop.

When the recent agreement was reached between the independent sheet and tin mills and the Amalgamated Association, in which last year's scale was readopted for the year beginning July 1, the Youngstown Sheet & Tube Company refused to sign the scale. A conference with its men was held July 16. President J. A. Campbell prepared a statement which he presented to the men and which sets forth in detail the reasons for deciding that in the future the company intends to operate its sheet mills on the open shop plan. This statement is in part as follows:

We believe the time has gone by when the Amalgamated Association can dictate the scale of wages to be paid in the production of steel or in finishing it into the various kinds of products. They control none of the important steel plants of the country, and as the United States Steel Corporation produces over half of the steel made in this country and has now decided to do away with the last vestige of union labor in its plants, it hereafter, and not the Amalgamated Association, will fix the rate of wages in all lines of steel manufacture. It has done this for some time in all lines except sheets and tin plate, and we believe in the future that it will apply to these products as well.

We go to the same customers with our product and are compelled to accept the same prices (sometimes less), and why should we be asked to pay more for our labor?

You may argue that the corporation will not succeed in establishing its "open shop" policy. Any one of you know that this is not its history. It absolutely dominates the situation and has the time, the ability and the money to carry out any policy, which is fair, that it undertakes, and all the time and money you give to defeat it is only that much time and money wasted. Anyhow, its "open shop" mills have earned much more money per man, per year, than its union mills. It does not need me to speak of its fairness to its employees, but it maintained the same scale of wages in 1908 and 1909 when its mills were only operated part time as it did in 1907, the busiest year in our history, while nearly all other steel companies reduced their employees 10 to 15 per cent.

This should be some evidence that it can be trusted to establish a fair wage rate at all times. Our company is in favor of paying good wages, the highest paid by our principal competitors, and, as evidence of this, we cite you our action the last two years when we, too, maintained the same wages as in 1907, notwithstanding the fact that we were repeatedly solicited to reduce wages. Besides, we recommended to our Board of Directors at their last meeting that we share with all of our employees (except union labor) a percentage of our profits, and they have approved the same, and we believe that our stockholders will act favorably on the matter at the annual meeting to be held on the last of this month. We estimate that their share will be 5 to 10 per cent. on the yearly earnings of each employee, depending, of course, on how profitable the year's business has been.

We refuse to sign the Amalgamated scale on principle. We want to be free to manage our own business in our own way and with all fairness to our employees, but we must know that our mills are not to be closed every year on July 1 unless we accede to some scale of wages made up by men who are not our employees. This is a loss to our stockholders and workmen, and in our opinion unnecessary.

This promises to be the first serious disagreement we have had with our employees, and we want to assure you that we have not decided the matter hastily or without serious consideration.

The meeting was a harmonious one and at its conclusion the men said that they would take the proposition of the company under consideration and would report their action later. The men held a meeting the next day and by a vote refused the proposition, and the Amalgamated Association has declared a strike at this plant and it is now idle. The company is making preparations to start up with new men. It recently placed contracts for the building of eight more hot sheet mills at its plant and these will be installed as soon as possible. The strike will not in any way interfere with the plans of the company for building these new mills.

The Republic Iron & Steel Company Signs the Amalgamated Scale.

At a conference held in Pittsburgh July 16 an agreement was reached and the Republic Company signed the Amalgamated scales for its puddling and finishing mills, the same scale being adopted as had previously been signed by the Western Bar Iron Association. Only a few of the mills owned by the Republic Company are iron propositions; that is, mills turning out iron bars and which employ puddlers and finishers. The plants for which the Republic Company has signed the scale for puddling and finishing are the Brown-Bonnell and Mahoning Valley mills at Youngstown, Ohio, and the mills at Moline and East St. Louis, Ill.; East Chicago, Ind.; Massillon and Toledo, Ohio, and Gate City, Ala. The rate for puddling for July and August, as determined upon at this conference, will be $5.12½ per ton, as against $5.25 in May and June and $5.37½ in March and April.

The American Sheet & Tin Plate Company Strike.

In the tin plate mills at the American Works at Muncie, Ind., eight hot tin mills were started out of 28, while

at the Shenango Works at New Castle, Pa., which has 30 hot mills, five mills have been started, and all with nonunion men. The Monongahela tin plate plant at Pittsburgh and the United States Works at Demmler, Pa., are now both running in full with nonunion men, and the company expects this week to start additional mills at Muncie and at New Castle. New men are being sent to these plants as fast as they can be obtained. The Struthers plant at Struthers, Ohio, and the Saltsburg mills at Saltsburg, Pa., both of which are sheet propositions, have been started up in full and with nonunion men. The company is at present operating, in spite of the strike, over 40 per cent. of its available tin plate capacity and close to 85 per cent. of its serviceable sheet mills. There has been no disorder of any moment at any of the plants. The strikers have placed pickets around the different mills and are endeavoring to prevent new men from going to work, but their efforts in most cases have been unsuccessful.

PERSONAL.

Walber R. Rosen of Ladenburg, Thalmann & Co., bankers, New York, has been made a member of the Executive Committee of the Southern Iron & Steel Company.

W. P. Clyde has been elected a director of the Sloss-Sheffield Steel and Iron Company.

N. A. Root, formerly with the Allis-Chalmers Company, San Francisco, has entered the employ of the A. L. Young Machinery Company.

H. Almert, an engineer of long practice in Chicago, has been appointed manager of the department of examinations and reports, and W. R. Thompson, late of the Public Service Commission of New York State, and formerly with Westinghouse, Church, Kerr & Co., has been appointed assistant to the chief engineer of H. M. Byllesby & Co., Chicago.

Edward G. Dewald, formerly manager of the water wheel department of the Platt Iron Works Company, Dayton, Ohio, has become identified with the hydraulic turbine department of the Allis-Chalmers Company. He will be special representative on the Pacific Coast.

Adam Freiburger, superintendent of the plant of the Worden-Allen Company at Milwaukee, Wis., has been appointed superintendent of the new bridge works now being erected at Buffalo by the Lackawanna Bridge Company, which is controlled by the same interests. Work is being rushed on the new plant, which is at Abbey and Bell streets and the South Buffalo Railroad, and it is expected to have it ready for operation about September 1.

A party of officials of the Hungarian Government, comprising Dr. Janos Kossalka, Albert Szanto, Bela Obholczer and Janos Seltsam, have come to this country to make a study of the manufacture of special steels for bridges and American methods generally as a preliminary to the construction of a large bridge in Hungary.

L. J. Firth will next spring retire as managing director of Thos. Firth & Sons, Ltd., Norfolk Works, Sheffield. He will retain his connection with the Firth-Sterling Steel Company, McKeesport, Pa., as its president.

Elmer H. Fish has been elected the director of the new Worcester Independent Industrial School. He is at present an instructor at the Worcester Polytechnic Institute, from which he was graduated in 1892. For nine years he was associated with his father, Henry C. Fish, in the machine tool manufacturing business at Worcester, producing a line of engine lathes, and upon the winding up of that business went to the Polytechnic, where he has since been an instructor in various subjects kindred to a trade school course designed primarily for the development of mechanics.

Charles R. Crane, first vice-president of the Crane Company, Chicago, has been appointed Minister to China by President Taft, and has accepted. Mr. Crane has traveled extensively in the Far East, spending considerable time in the interior of China. In an interview, after the announcement of his appointment, he expressed his determination to aid "American enterprise to secure and maintain an adequate foothold in a country which promises to be the richest market of the world."

Benjamin Nicoll of B. Nicoll & Co. will sail for Europe July 27 and will probably be gone several months.

Leonard Peckitt, president of the Empire Steel & Iron Company, left for Europe on Tuesday, expecting to return in September.

Mrs. Harriet Clark Fisher, owner and manager of the Eagle Anvil Works, Trenton, N. J., sailed from New York July 17 for a trip round the world, which will include touring in Egypt, India and China and a month's stay in Japan.

Dr. William B. Phillips, Birmingham, Ala., has been chosen by the Board of Regents of the University of Texas, Austin, Texas, to take charge of the newly established bureau of economic geology and will enter upon the work September 1. This bureau represents the reestablishment under the university's auspices of the Texas Mineral Survey, of which Dr. Phillips was chief for four years, but which was discontinued when legislative appropriations ceased. Dr. Phillips has been for some time investigating the iron ore deposits at Iron Mountain, Llano County, Texas, and prospecting work is still going on there, both Bessemer and non-Bessemer ores being found. A new vein partly opened up shows ore of 66.30 per cent. iron, 6.30 per cent. silica, 0.145 per cent. phosphorus and 0.040 per cent. sulphur. The constant demand for information concerning the mineral resources of Texas following the Texas mineral exhibit at St. Louis seemed to make the establishment of a general geological survey imperative, and the State has been fortunate in securing Dr. Phillips' consent to take up the work again.

Ray D. Lillibridge, technical publicity, has taken into partnership William L. Rickard, but the business will be continued with the name unchanged. The office has been removed to 100 Broadway, New York, suite 20 to 22, on the eleventh floor.

Wm. Kennedy, formerly assistant superintendent of the Riverside department of the National Tube Company, Wheeling, W. Va., has been made general superintendent, succeeding Frank W. Peterson, who was killed recently in an automobile accident. Harry Boyd, formerly night superintendent, has been appointed assistant superintendent to succeed Mr. Kennedy.

D. B. Meacham of Rogers, Brown & Co., Cincinnati, Ohio, sailed from Quebec for Liverpool on the Empress of Britain July 16. He is accompanied by his family and will remain abroad until October.

W. D. McCreary, formerly superintendent of the Atlantic Furnace of the Republic Iron & Steel Company, at New Castle, Pa., has been promoted to the position of superintendent of the company's three Haselton furnaces at Haselton, Ohio. He succeeds Carl Forkum, who resigned to accept the position of general superintendent of the three furnaces now being built by the Jones & Laughlin Steel Company at Aliquippa, Pa.

Harry E. Moore, manager of the Philadelphia branch of the Lansing Wheelbarrow Company, Lansing, Mich., has been elected a member of the Board of Directors and treasurer of the company, and will make his headquarters at the home office in Lansing, Mich. Harry L. Tripple, for a number of years manager of the scale department of the Fairbanks Company, Philadelphia, succeeds Mr. Moore as manager of the Philadelphia branch house.

Nathan A. Taylor of the N. & G. Taylor Company, manufacturer of tin plate, Philadelphia, sailed for Europe July 14.

Albert Britton, formerly with the Interstate Iron & Steel Company, Guernsey, Ohio, has been appointed assistant superintendent of the Welland Steel Company, Welland, Canada.

J. C. Maben, president of the Sloss-Sheffield Steel & Iron Company, sailed July 17 for a two months' sojourn abroad.

Planting Industries in Canada.

TORONTO, July 16, 1909.—Part of the waste land on Toronto's water front known as Ashbridge's Marsh is again in demand for an iron industry. This time the proposal is to establish a large foundry to manufacture cast iron pipe and other articles. The scale of the undertaking is indicated by the statement that an initial investment of $500,000 will be put into buildings and plant. Cawthra Mulock, a Toronto capitalist, and his father, Sir William Mulock, Chief Justice of the Exchequer Division of the High Court of Ontario, are the men of substance behind the project. The city of Toronto, as owner of the marsh, has to be dealt with. An offer has been made to the city of $4000 an acre and $1000 an acre for the water lots in the 22-acre section that is wanted as site. The city is asked to dredge a water course to a depth of 14 ft. for a short distance from the outlet to Lake Ontario, so that vessels can unload at the wharves. The channel is now about 8 ft. deep. The arrangement would not interfere with the carrying out of the city's plan of reclamation and improvement of the marsh as a factory site area with suitable railroad approaches, sidings and slips. Only about one-tenth of the marsh is asked by the promoters of the foundry scheme. There is no connection between this undertaking and the blast furnace project of Mackenzie & Mann. The latter remains in abeyance, for the reason, it is said, that the United States capital depended on is not yet forthcoming. Possibly at some time in the future the furnace will be built and operated upon ores from the Moose Mountain mine.

Steel and Wagon Works for Port Arthur.

Port Arthur's Municipal Council has a proposal now before it for the establishing of large works for the manufacture of steel and wagons. The proposal made in behalf of the municipality provide that a 20-year 5 per cent. $100,000 bond issue of the company be guaranteed by the city; that no other bonds be disposed of by the company; that the issue is to cover the entire land and plant property of the company; that the city provide dock privileges, though these shall not be for the exclusive use of the company, but shall be at its service in consideration of an annual rental; that the company shall for a period be exempt from taxation except on school and local improvement account; the city to provide a site not to exceed 20 acres in extent; the company to expend $200,000 in buildings and plant, and for the first two years to employ 125 men, the number to be afterward increased. Of course, the towns must receive the sanction of the ratepayers before they become building on the city. The company would build wagons for the Canadian West, orders for upward of 1000 vehicles having been already obtained.

Relighting Fires.

The coke ovens of the Atikokan Iron Company, at Port Arthur, have been relighted, and it is announced as a certainty that the company's iron furnace will be in blast again before the first of next month. The iron plant has undergone a considerable amount of overhauling, rendered necessary by its long disuse. A magnet crane for handling the iron and a quantity of new machinery have been installed. The changes will add materially to the economy of operating the plant.

North Sydney Projects.

The town of North Sydney, Nova Scotia, has two proposals for establishing new industries within its limits. One is a smelter project. The proposed plant would treat metals other than iron. Its promoter has been bargaining with the Town Council a long time, but the Mayor believes that more information should be before the municipal corporation before action is taken to acquire the site asked for. The other project has also been quite a long time under negotiation. It is for the building of car wheel works. A year ago last April the Provincial Legislature of Nova Scotia passed a bill enabling the town to borrow a sum not exceeding $10,000, to be expended upon public business in relation to the Illinois Steel Solid Forged Car Wheel Company. Previous to the enacting of this legislation the town and the company had come to an understanding. The company would erect works to manufacture 100 wheels a day, it would maintain a payroll of not less than $500 a day, and would daily consume steel and coal costing not less than $1100. Nothing came of the arrangements at the time, some hitch preventing an issue. On the 28th of last month the president of the company wrote from Chicago renewing proposals. He asks that $10,000 be raised by the town at the outset and $10,000 later on in support of the industry, and engages to raise $150,000 in the United States to establish and equip the plant.

C. A. C. J.

The twin tunnel tubes of the Hudson & Manhattan Railroad Company, from Cortlandt street, New York, to Exchange place, Jersey City, were opened for traffic July 19. A seven-car train, bearing distinguished officials and guests, pulled out from the spacious station under the Hudson Terminal Building at 10.26 a.m. and in less than 3 min. later reached the Pennsylvania Railroad Station in Jersey City, where the celebration of the opening of the second set of Hudson tunnels took place. At 3 p.m. the regular operation of trains was begun.

The Crane-Best Company, which is building a new valve and pipe-fitting plant at Oakmont, Pa., near Pittsburgh, has contracted with the Allegheny County Light Company for 2500 h.p. for the driving of electric motors, cranes, and compressors and for general lighting purposes of the new shops. The company made this contract in preference to building its own power plant.

The Follansbee Brothers Company, Pittsburgh, has moved into its new and commodious warehouse, 21 to 23 South Ford street, Rochester, N. Y., where a large assorted stock of tin plate, sheet steel and sheet metal workers' supplies will be kept on hand. This branch is under the charge of Walter B. Slifer, resident district sales manager.

No. 4 blast furnace of the National Tube Company at Lorain, Ohio, was put in operation July 2. This company owns a total of 11 blast furnaces, of which four are at McKeesport, Pa., two at Wheeling, W. Va., and five at Lorain, Ohio, all now being in operation for the first time in nearly two years.

The Phillips Sheet & Tin Plate Company, now building a new tin plate plant at Weirton, W. Va., has placed an order for cranes for the new plant with the A. W. Wycoff Company, Pittsburgh, representative of the Chase Crane Company. The cranes will be equipped with alternating current motors.

B. F. Jones, vice-president of the puddlers and finishers' division of the Amalgamated Association, stated recently in Youngstown, Ohio, that a great scarcity of puddlers exists and that he could place 500 puddlers in the union mills in the Pittsburgh District if they were available.

The American Smelting & Refining Company's report for the fiscal year ending April 30, 1909, shows a decrease in total earnings of $256,894, but an increase in net earnings of $78,693. The amount carried to surplus was $1,843,050, being $1,831,860 more than was thus carried over in the previous year.

The Longmead Iron Company announces that on August 1 its sales and financial departments will remove from 468 Drexel Building, Philadelphia, to the general office at the mills, Conshohocken, Pa. Communications should be addressed to the latter place after July 29.

The Sharpsville Furnace Company, Sharpsville, Pa., is preparing for active operation its furnace which has been idle for more than a year. It will be put in operation this month.

NEWS OF THE WORKS.

Iron and Steel.

The Ruby Mountain Iron & Furnace Company, 209 North Eleventh street, St. Louis, Mo., recently incorporated, will develop iron ore properties which it owns and intends to erect a blast furnace. Ore washers and considerable mining equipment will be installed for preparing the ore for the market and for its own use, and the company has in view the acquisition of a railroad to the Mississippi River to get a waterway to the Eastern market for its iron ore as well as its pig iron when the furnace shall have been built. In the fall the company expects to be in the market for steel rails, light locomotives, dump cars, &c. William H. Baumann is president.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, reports that its business is rapidly increasing, having secured 50 new railroad customers in the United States, Canada and Mexico and considerable business from railroads in many foreign countries during the past six months. An order has been received for a carload of its hollow staybolt iron bars from the Great Southern of Spain Railroad, making the second carload order from this road within the past year. The Great Northern Railroad recently specified hollow staybolt iron in five locomotives, the American Railroad of Porto Rico in three, the Ann Arbor Railroad in four, and the Detroit, Toledo & Ironton Railroad in eight.

No. 3 furnace of the Tennessee Coal, Iron & Railroad Company at Bessemer, Ala., has been blown out for relining. This stack will probably be ready for operation within 60 days.

The statement in these columns last week that the blast furnace of the Woodstock Iron Company at Anniston, Ala., would blow in August 8 was incorrect. The furnace was blown in July 8.

General Machinery.

The A W. Wycoff Company, Pittsburgh, representative of the Case Crane Company, Columbus, Ohio, is furnishing three 5-ton Case electric traveling cranes for the Niagara Falls plant of the Aluminum Company of America, making 25 Case cranes furnished different plants of this concern. It has also the contract for a 29-panel switchboard to be installed in the new Oliver Building, Pittsburgh, to be of the Western Electric Company's type, for which it is the Pittsburgh representative.

The Detroit River Iron Works, Detroit, Mich., Arthur Henderson, manager, has let contract for a two-story factory building, 40 x 100 ft., to be erected on Atwater street, between Joseph Campau avenue and Chene street.

The Union Drawn Steel Company, Beaver Falls, Pa., manufacturer of shafting, is making some large additions to its plant, including a new boiler house and machine shop. Some new tools will be needed for the latter.

The New Jersey & Pennsylvania Traction Company, Trenton, N. J., is building a repair shop to take care of its rolling stock.

The Centerfreze Ice Company of Oklahoma, capitalized at $700,000, has begun the erection of a plant at Oklahoma City, Okla., where its headquarters will be maintained. Among the directors are William H. Llewellyn and W. A. Fourness of New York. It is planned to have this plant ready for operation in October, and it is the purpose of the company to install similar plants in other cities of the State.

The Cambria Forge Company, Johnstown, Pa., has not yet completed plans for rebuilding its plant, which was recently destroyed by fire. The company formerly had two boilers, one of 120 hp. and the other 200 hp., and had a 150-hp. engine. In case it rebuilds the company will likely arrange for increasing the horsepower of both engine and boilers.

Frank N. Martenn, Oneonta, Ala., will establish a foundry and machine shop to manufacture shingle mills and other small machines.

The erection of a machine shop, planing mill and other buildings is contemplated by the Virginia & Rainy Lake Company, Virginia, Minn.

At the recent meeting of the Board of Directors of the Crocker-Wheeler Company, Ampere, N. J., Dr. Schuyler Skaats Wheeler was elected president; Gano Dunn, vice-president and chief engineer; A. L. Doremus, second vice-president; Rodman Gilder, secretary; W. L. Brownell, treasurer, and G. W. Bower, assistant treasurer.

The Handlan-Buck Mfg. Company, St. Louis, Mo., has not yet fully completed plans for its new plant. The company reports a steady improvement in business and states that it will have to arrange for much larger quarters in the near future.

The Bogart Gas Power Engineering Company, Chamber of Commerce Building, Buffalo, N. Y., has been incorporated to manufacture Bogart gas and gasoline engines in single and double acting tandem types. Arrangements have been made for the building of these engines for the present, but later the company expects to establish its own shops and in addition to gas and gasoline engines it will build complete producer gas plants. James A. Venable is president; C. W. Bogart, vice-president; William Christian, secretary and treasurer, and John T. Mullany, general sales agent.

The Broderick & Quinlan Boiler Works is building an addition to its machine shop and an office building.

The Speed Changing Pulley Company, Anderson, Ind., is making for the owner of a Southern plantation a machine for picking cotton which, it is said, by the aid of 10 men can pick as much cotton as 50 men by hand. The machine suggests a large spider. Occupying the center of a four-wheeled truck is a drum, with 10 tubes radiating from it. A high speed motor with fans creates a strong suction in the tubes, the ends of which are placed over the cotton balls by the men operating the machine. A slight pressure on an air valve releases small grappling hooks which take off the cotton and carry it into the tube, whence it is drawn to the drum, where it is compressed. The drum has a capacity for a ton of cotton.

The Boston Machine Shop Company, Oroville, Cal., which has been occupying temporary quarters since the partial destruction of its plant two years ago, is constructing a new building on the old foundations which will largely increase its shop facilities. In addition to the present equipment several larger and more modern machines will be installed.

Fairbanks, Morse & Co., Chicago, Ill., have received from the Water Commission, Athena, Ore., a contract for a motor driven turbine pump of 500,000 gal. daily capacity against 120 lb. pressure.

The Industrial Works, Bay City, Mich., is building a wrecking crane of 100 tons capacity for the Western Maryland Railroad.

The Standard Pattern Mfg. Company, Richmond, Ind., has purchased the air compressor and vapor engine manufacturing business of the Light Inspection Car Company, Hagerstown, Ind., and the equipment will be moved to the Richmond plant. The Hagerstown company will continue the manufacture of inspection cars and automobiles.

Thomas Randall, Ann street, Little Falls, N. Y., is having a livery stable building remodeled into an automobile garage with a capacity for 60 machines. In addition to the garage Mr. Randall will equip and maintain a modern automobile repair shop.

The Corning & Painted Post Street Railroad, Corning, N. Y., will build a new one-story repair shop at the rear of its power house and car barn. Construction will probably be started early this fall.

Foundries.

Hugh A. Bayne has been appointed receiver for the Western Foundry Supply Company, New York, whose liabilities are stated to be about $80,000.

A new foundry will be added to the works of the Iowa Stove & Range Company, Waterloo, Iowa.

The Sivyer Steel Casting Company, Milwaukee, which now occupies one of the buildings of the Northwestern Malleable Iron Company, will erect a new plant if a suitable site on the railroad can be found in that vicinity.

The W. K. Henderson Iron Works & Supply Company, manufacturer of machinery and mill supplies, Shreveport, La., is to erect a new foundry, 80 x 151 ft.

The Shirley Radiator & Foundry Company, Shirley, Ind., will enlarge its plant and add boilers to its line of products.

Power Plant Equipment.

The citizens of Fairfield, Neb., have voted to install an electric light and water works system.

The installation of another boiler, and possibly a new electric generator, is being considered by the management of the municipal plant, Bayfield, Wis.

The Tomahawk Power Company, Tomahawk, Wis., has started work on a new hydraulic power development in that vicinity.

The Kankakee (Ill.) Electric Light Company contemplates installing a hydro-electric unit of 300 hp.

The organization of a company to install an electric light plant at Clarksville, Mo., is under consideration. E. N. Moody is secretary of the committee in charge of the project.

Improvements are to be made in the equipment of the municipal power plant at Princeton, Minn.

Nickerson, Kan., will install a municipal electric light and power plant, as well as water works.

It is reported that B. F. Proctor, Eldorado Springs, Mo., will be in the market before long for an engine and electric generator.

Shipments of Murray-Corliss engines by the Murray Iron Works Company, Burlington, Iowa, for the first six months of this year exceeded in number those for any previous corresponding period. The company recently exported a complete power plant for a flour mill in Tsingkiangpu, China, the shipment including a Corliss engine, tubular boiler, heater, &c.

Burns & McDonnell, engineers, Kansas City, Mo., have prepared plans for water works improvements and an electric light plant at Blackwell, Okla.

The Mayor of Greenville, Texas, will receive bids until July 27 for two 300-hp. water tube boilers, one 300-kw. and one 200-kw. alternators, one 14-in. centrifugal pump direct connected to 75-kw. motor for the electric light plant.

A pumping plant and electric generating station are to be erected by the city of Ashland, Kan.

It is reported from Albany, Ore., that work will be started this fall on a new power plant of 10,000 hp. capacity or more at Martin's Rapids, for the Portland, Eugene & Eastern Railroad, Eugene, Ore.

Bridges and Buildings.

During the past three months the S. R. Smythe Company, House Building, Pittsburgh, has been appointed consulting engineer for a number of new plants in the Pittsburgh District and elsewhere. The new plant of the West Penn Steel Company, at Brackenridge, Pa., was designed throughout by and is now under complete supervision of the S. R. Smythe Company, which is also building the open hearth and soaking pit furnaces, &c., at this plant. The company has also designed and has received contracts for large work for the following concerns: The Wheeling Mold & Foundry Company, Wheeling, W. Va.; Braddock Machine & Mfg. Company, Braddock, Pa.; United Engineering & Foundry Company, Vandergrift, Pa.; Sweets Steel Company, Williamsport, Pa., and Lobdell Car Wheel Company, Wilmington, Del. Estimates and plans upon a considerable amount of work are also being prepared, for which contracts will be awarded as soon as plans can be completed and approved.

The Michigan State Fair Association is planning to erect a building for the storage and exhibition of machinery at the Michigan State Fair, at an estimated cost of $200,000. Vincent V. Green, superintendent of vehicle and machinery department, Michigan Central Railroad and Junction avenue, Detroit, will have charge of its construction.

Contract for a steel bridge to be built at Kaukauna, Wis., has been let to Weyenberg & Garvey.

The Alphonso Walrath Company, Fort Plain, N. Y., whose plant was recently destroyed by fire, has not yet completed plans for the new plant nor has a location been decided upon, although it is likely that the plant will be rebuilt at Fort Plain. When it rebuilds the company desires to have a fireproof building and desires information regarding such construction.

The Kenwood Bridge Company, Chicago, has the contract for the steel work of a machine shop 60 x 176 ft. which the Pierce Motor Company, Racine, Wis., is adding to its plant.

The Jacob J. Voirath Mfg. Company, Sheboygan, Wis., has decided upon the immediate construction of new buildings as follows: Boiler and engine house, stamping shop, annealing plant, enameling shop and a large warehouse.

The Des Moines Bridge & Iron Company, Des Moines, Iowa, has recently closed the following contracts for structural material: Des Moines Electric Company's power station, 340 tons and a 120-ton self-supporting steel stack; Cedar Rapids & Iowa City Light & Railway Company's boiler house, 100 tons; Eureka Stone & Ore Crusher Plant, Cedar Rapids, Iowa, 60 tons.

The following bridge contracts are to be let in Indiana: By commissioners of Dearborn County, at Lawrenceburg, August 2, two bridges; W. S. Fagaly, auditor. By commissioners of Marshall County, at Plymouth, August 3, one iron bridge and concrete abutments; C. M. Walker, auditor. By commissioners of Fountain County, at Covington, August 3, three bridges and repair of one; W. B. Gray, auditor. By commissioners of Montgomery County, at Crawfordsville, August 3, one bridge; R. B. Engle, auditor. By commissioners of Warwick County, at Boonville, August 3, one steel bridge, 16 x 40 ft.; Ray F. Cherry, auditor.

The American Locomotive Company, New York, has awarded contracts for the construction of a tank shop and paint shop at the Brooks plant at Dunkirk, N. Y. The building is to be of steel, brick and concrete construction, one story, 185 x 825 ft. The steel work was awarded to the American Bridge Company and the general construction to B. F. Aldrich, Dunkirk. Work on construction is being started this week.

Fires.

The boiler works of Henry H. McCathern, Bridgeport, Conn., was destroyed by fire July 15, the loss being about $3000.

The tannery of G. T. Birley & Sons, Frederick, Md., was destroyed by fire July 18, the loss being about $30,000.

The abattoir and refrigerating plant of the Humphrey Supply Company, Reno, Nev., were recently destroyed by fire, the loss being about $25,000.

The plant of the Nilson Yacht Building Company at Baltimore, Md., was burned July 19 with a loss of $30,000.

The pumping station at Onalaska, Wis., with all machinery, has been destroyed by fire.

Hardware.

The Cyclone Fence Company, Waukegan, Ill., has had plans drawn for a new plant, 50 x 100 ft.

The Warner Fence Company, Ottawa, Kan., is said to have determined upon the erection of a new plant in Pueblo, Colo.

The Norwich Wire Basket Company, Norwich, N. Y., has been incorporated by Emmet R. Franklin, J. B. Turner, J. B. Van Cleft and T. B. Fernalld, to manufacture various forms of wire baskets.

Miscellaneous.

An issue of bonds amounting to $69,000 has been voted by the city of Ryan, Okla., for public improvements, which will include the installation of electric lighting and water works systems and sewers. J. W. Borum is city clerk.

The Haywood Wagon Company, Baldwinsville, N. Y., has completed plans for a factory building which it is to erect at Newark, N. Y.

The Westinghouse Storage Battery Company, New York, has been organized with an authorized capital stock of $1,750,000, of which $250,000 is 6 per cent. preferred stock. The company will take over the storage battery department of the Westinghouse Machine Company. At present the Westinghouse Machine Company will continue to manufacture the storage batteries and the new company will be principally a holding company.

Plans have been prepared for a new brick factory to be built by the H. W. Johns-Manville Company in the Menominee Valley, near Milwaukee.

The Atlas Locomotive Ash Pan Company, Fort Wayne, Ind., is reported to have decided upon the erection of a factory at either Muncie or Fort Wayne.

The Michigan Crank Shaft Company, Muskegon, Mich., has been formed to manufacture crank shafts for automobiles.

The Rushville Gas, Heat & Water Company, Rushville, Ind., has been incorporated with a capital stock of $100,000.

Two companies, one the Merchants' Ice Company, $40,000 capital, and the other the Merchants' Cold Storage Company, $10,000 capital, have been incorporated at San Antonio, Texas, by J. H. Kirkpatric, E. H. Wedekind and Geo. B. Marshall.

The American Agricultural Chemical Company will build a three-story brick and concrete extension, 120 x 127 ft., to the acid department of its fertilizer works at Babcock street and the Erie Railroad, Buffalo, N. Y., to cost $50,000. It will equip this building with lead tanks and acid chambers and the necessary operating machinery.

A franchise for water works at Hagerstown, Ind., has been secured by Hancock & Van Metre, Yorktown, Ind., who will let separate contracts for pipe and the construction of a tank and tower.

The Walter Cabinet Company, Hopkins, Mich., is moving its factory from that place to Wayland, Mich., where it has in course of construction a new two-story factory building, 60 x 250 ft. The machinery of the old plant will provide the necessary equipment for the present, but this will be added to later on.

Arthur E. Woodward, a capitalist of Lapel, Ind., and John Clark of Anderson propose to establish an automobile factory in Anderson.

The Mandt Wagon Company, Stoughton, Wis., is preparing plans for the immediate erection of a brick and steel factory building, 80 x 200 ft., with smaller additions for cupola, core room and grinding room. The equipment for this plant has been arranged for, and it will probably be completed within the next four months. Foundations are being prepared for the power plant, 50 x 120 ft., which will be constructed under the company's own supervision. Outside of the structural steel work no building contracts will be awarded.

The Muncie Wheel Company, Muncie, Ind., is building an addition that will increase the capacity of the plant one-fourth. The company will make high wheels for automobiles in addition to its regular line.

Plans have been completed for the plant of the Muncie Gear Works, which will manufacture automobile gears and supplies. The head of the company is Hugh Warner, formerly one of the principal stockholders in the Warner Gear Works.

The Interstate Automobile Company will duplicate its present plant. The company has contracted to build 2500 cars before next season.

It is reported that the Comfort Motor Machine Company, Denver, Colo., will lease or build a plant at Davenport, Iowa.

Contract has been let for building a factory for the Freeland Steel Tank Company, Portage, Wis.

The Roof Engine Company, Muncie, Ind., has been organized to build engines.

The Blackstone Guano Company, Blackstone, Va., has purchased a site with a frontage of 375 ft. on the railroad, upon which it will erect a plant, 100 x 120 ft., for the manufacture of fertilizers. The plant will be equipped with modern machinery and a side track will run the entire length of the building. T. M. Dillard is president and W. G. Epps secretary.

The De Schaum-Hornell Motor Company, Hornell, N. Y., which is to erect a new automobile plant, 60 x 190 ft., two stories, has been incorporated with a capital stock of $150,000. The incorporators are W. A. De Schaum, H. J. Hopkins and W. C. Paul.

The City Clerk of Carl Junction, Mo., will receive bids until July 28 for a 70-gal. motor driven deep well pump, pipe, fittings, steel tank and other supplies for the water works system.

The Everett-Metzgers-Flanders Company, Detroit, Mich., has purchased the plant of the De Luxe Motor Car Company.

The Iron and Metal Trades

Eastern Pennsylvania Steel Works Buy Basic Pig Largely.

Advances Probable in Bars, Shapes, Plates and Wire.

The pig iron markets are strong throughout the whole country, but it has been chiefly in the East that there has been activity. Steelmakers in eastern Pennsylvania have been purchasing additional quantities. Four of the plants took in all 44,000 tons, one of them buying 9000 tons, two 10,000 tons each and one 15,000 tons, some of it for prompt delivery. Apparently the requirements for this year are not yet satisfied, and it is probable that one large steel interest may need some basic iron for an Eastern plant. A number of the eastern Pennsylvania steelmakers have come forward with inquiries for the first quarter of 1910, on which sellers ask considerably higher prices. No business has yet been done.

Prices on foundry iron are higher, but outside of the tidewater markets, New England and the Buffalo District, little has been done. The southern Ohio furnaces have advanced their price to the basis of $15, Ironton. Alabama producers are holding firmly at $12.50 to $13, but do not appear to have done any business of consequence.

Steel billets are higher in all the markets, and a fair amount of business has been done. A shortage has developed in the Chicago District, but relief is expected next month through the starting of the Gary mill.

The situation at the Bessemer plant at South Chicago is such that new orders for Bessemer rails must go to Edgar Thomson for the present, thus putting work into that rail mill, which has been running only at a 35 per cent. gait for a long time. Some steel rail business is pending in the West, the Atchison among other roads having come in for additional tonnage. Of the Boston & Maine order 10,000 tons has been placed with the Pennsylvania Steel Company. A like amount will probably be placed in the near future. The New Haven road has made arrangements for the rerolling of an additional lot of 15,000 tons of old rails during this year. It is understood that thus far this process has been a clear success only with very heavy rails.

The greater activity in placing car orders is giving much encouragement to the plate and structural mills. A fair amount of tonnage is coming out in other directions. Among the structural orders placed were 5000 tons for the Jones & Laughlin steel plant at Aliquippa, 2000 tons for two new rolling mills in the Mahoning Valley, 1600 tons for a warehouse in Texas City, 5300 tons for the concentrating plant of the Oliver Mining Company at Colerain, Minn., and 1800 tons for the Newhouse Hotel at Salt Lake City.

The leading interest will probably announce an advance of prices in one line of finished products early next week. This is likely to be quickly followed by advances in steel bars, shapes and plates on which the principal independent manufacturers have been quoting a higher basis for some time.

Sheets are in a much better position than they have been for some time past. The cutting of prices has almost entirely disappeared.

Buyers of copper are still maintaining their reserve. Reports of sales of some magnitude cannot be traced to any reliable source. Excessive production dominates all the markets, all the assertions of speculators to the contrary notwithstanding.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	July21, 1909.	July14, 1909.	June23, 1909.	June24, 1908.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	$16.50	$16.50	$16.50	$16.50
Foundry No. 2, Southern, Cincinnati	15.75	15.75	14.75	15.25
Foundry No. 2, local, Chicago	17.00	17.00	16.50	17.50
Basic, delivered, Eastern Pa.	16.00	15.50	15.50	15.25
Basic, Valley furnace	15.00	15.00	15.00	15.25
Bessemer, Pittsburgh	16.40	16.40	16.15	16.90
Gray forge, Pittsburgh	14.90	14.90	14.90	14.90
Lake Superior charcoal, Chicago	19.50	19.50	19.50	20.00
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	24.00	23.00	23.00	25.00
Forging billets, Pittsburgh	28.00	27.00	26.00	27.00
Open hearth billets, Philadelphia	25.50	25.00	25.00	26.20
Wire rods, Pittsburgh	29.00	29.00	29.00	33.00
Steel rails, heavy, at mill	28.00	28.00	28.00	28.00
OLD MATERIAL, Per Gross Ton:				
Steel rails, melting, Chicago	14.50	14.50	14.50	12.50
Steel rails, melting, Philadelphia	16.00	16.00	16.00	13.50
Iron rails, Chicago	17.00	17.00	17.00	15.50
Iron rails, Philadelphia	19.50	19.50	19.50	18.00
Car wheels, Chicago	16.00	16.00	16.00	13.00
Car wheels, Philadelphia	15.00	14.75	15.00	13.50
Heavy steel scrap, Pittsburgh	16.00	15.75	15.75	13.25
Heavy steel scrap, Chicago	*14.00*	14.00	14.50	11.50
Heavy steel scrap, Philadelphia	16.00	16.00	16.00	13.50
FINISHED IRON AND STEEL.				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined iron bars, Philadelphia	1.45	1.45	1.45	1.40
Common iron bars, Chicago	1.35	1.35	1.35	1.50
Common iron bars, Pittsburgh	1.45	1.45	1.40	1.40
Steel bars, tidewater, New York	1.46	1.41	1.36	1.56
Steel bars, Pittsburgh	1.30	1.25	1.20	1.40
Tank plates, tidewater, New York	1.51	1.51	1.41	1.76
Tank plates, Pittsburgh	1.35	1.35	1.25	1.60
Beams, tidewater, New York	1.51	1.51	1.41	1.76
Beams, Pittsburgh	1.35	1.35	1.25	1.60
Angles, tidewater, New York	1.51	1.51	1.41	1.76
Angles, Pittsburgh	1.35	1.35	1.25	1.60
Skelp, grooved steel, Pittsburgh	1.35	1.30	1.30	1.45
Skelp, sheared steel, Pittsburgh	1.45	1.40	1.40	1.50
SHEETS, NAILS AND WIRE,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.40
Wire nails, Pittsburgh (to jobbers only)	1.70	1.70	1.70	1.95
Cut nails, Pittsburgh (to jobbers only)	1.70	1.70	1.65	1.75
Barb wire, galvanized, Pittsburgh (to jobbers only)	2.00	2.00	2.00	2.40
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	13.50	13.12½	13.25	13.00
Electrolytic copper, New York	13.00	13.00	13.00	12.87½
Spelter, New York	*5.35*	5.35	5.40	4.55
Spelter, St. Louis	5.27½	5.27½	5.27	4.40
Lead, New York	4.35	4.35	4.35	4.50
Lead, St. Louis	4.20	4.25	4.20	4.40
Tin, New York	*29.00*	28.90	29.05	27.60
Antimony, Hallett, New York	7.50	7.50	7.50	8.50
Nickel, New York	45.00	45.00	45.00	45.00
Tin plate, 100 lb., New York	$3.64	$3.64	$3.64	$3.89

Prices of Finished Iron and Steel F.O.B. Pittsburgh.

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 20c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural steels and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Structural Shapes.—I-beams and channels, 3 to 15 in., inclusive, 1.35c., net; I-beams over 15 in., 1.45c., net; H-beams over 8 in., 1.55c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c., net; angles, over 6 in., 1.45c., net; angles, 3 x 3 in. and up, less than ¼ in., 1.55c., base, half extras, steel bar card; tees, 3 in. and up, 1.44c., net; zees, 3 in. and up, 1.40c., net; angles, channels and tees, under 3 in., 1.30c., base, plus 10c., half extras, steel bar card; deck beams and bulb angles, 1.60c., net; hand rail tees, 2.70c., net; checkered and corrugated plates, 2.70c., net.

Plates.—Tank plates, ¾ in. thick, 6¼ in. up to 100 in. wide, 1.35c., base. Extras over this price are as follows:

Tank, ship and bridge quality, ¼-in. thick on edge, 100 in. wide, down to but not including 6 in. wide, is taken as base.

Steel plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, shall be considered ¼-in. plate. Steel plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Steel plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. shall take the place of 3-16-in.

Percentages as to overweight on plates, whether ordered to gauge or weight, to be governed by the Association of American Steel Manufacturers' Standard Specifications.

Gauges under ¼-in. to and including 3-16-in. plates on thin edges	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
All sketches (excepting straight taper plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.)	.10
Complete circles	.20
Boiler and flange steel plates	.10
"A. B. M. A." and ordinary firebox steel plates	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Shell grade of steel is abandoned.	
For widths over 100 in. up to 110 in	.05
For widths over 110 in. up to 115 in	.10
For widths over 115 in. up to 120 in	.15
For widths over 120 in. up to 125 in	.25
For widths over 125 in. up to 130 in	.50
For widths over 130 in	1.00

TERMS.—Net cash 30 days. Pacific Coast base, 1.30c. f.o.b. Pittsburgh.

Sheets.—Minimum prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows: Blue annealed sheets, No. 10 and heavier, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 2.05c.; box annealed sheets, Nos. 17 to 21, 2c.; Nos. 22 to 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Galvanized sheets, Nos. 13 and 14, 2.25c.; Nos. 15 and 16, 2.35c.; Nos. 17 to 21, 2.50c.; Nos. 22 to 24, 2.65c.; Nos. 25 and 26, 2.85c.; No. 27, 3.05c.; No. 28, 3.25c.; No. 29, 3.25c.; No. 30, 3.60c. Painted roofing sheets, No. 28, 1.55c. per square. Galvanized roofing sheets, No. 28, 2.80c. per square for 2½-in. corrugations.

Wrought Pipe.—Discounts on steel pipe, ¾ to 6 in., in carloads to the largest trade, are 81 and 5 per cent. off list, and on iron pipe, 3½ to 6 in., are 77 and 5 per cent. off list.

Boiler Tubes.—Regular discounts are as follows:

Boiler Tubes.

	Steel.
1 to 1½ in.	50
1¾ to 2¼ in.	62
2¾ to 5 in.	70
2½ in.	64
6 to 13 in.	62

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

Wire Rods.—Bessemer rods, $29; chain rods, $29; basic rods, $29 to $30.

Steel Rivets.—Structural rivets, 1.60c., base; boiler rivets, 1.70c., base.

Chicago.

FISHER BUILDING, July 21, 1909.—(*By Telegraph.*)

The substantial progress being made in the iron and steel industry is well attested by the continued upward trend of prices. Another advance of $1 a ton on plates and shapes is announced this week, bringing the price up to 1.58c., base, Chicago, on these products. Steel bars are also stronger, having practically advanced to 1.48c., base, Chicago, since only the most desirable orders are being entered at last week's quotation of 1.43c. There is a pronounced shortage in billets, which in the mills of the leading interest is for the moment interfering with the unrestricted employment of full capacity in some finishing departments. This deficiency, however, will be supplied as soon as the Gary billet mill is ready for service, which will probably be some time next month. In the heavier lines of finished material specifications continue to come in at a rate more than equal to the productive capacity, and in addition thereto a fair tonnage of open orders for current needs is being entered. With mill deliveries of sheared plates, steel bars and shapes running anywhere from four to six weeks behind, consumers are compelled to rely to a greater extent upon jobbers' stocks for their immediate requirements. Material for the underframes of 1000 freight cars to be built by the Pullman Company will be required, but the order has not yet been placed. A contract for the construction of another lot of 350 street cars for the Chicago Railways Company has also been secured by the Pullman Company. Much emphasis is placed in current reports of increased activity in car building, but it should be remembered that, as compared with the available car shop capacity, the business thus far placed is small. There is no doubt that the fuller development of business is being retarded in many lines by the prolonged delay in concluding the pending tariff revision.

Pig Iron.—Actual sales last week were small, being comprised principally of 100 to 500 ton lots of foundry iron. Inquiries from the smaller melters are fairly numerous, indicating that there is yet considerable iron to be bought for last half, and especially last quarter delivery. Buyers generally have thus far manifested little interest in contracts running beyond the first of the year, and sellers are reluctant to take on first half tonnage at even minimum prices now ruling for deliveries through the remainder of this year. Although trade has eased off and buying is light, there is significance in the fact that prices are nevertheless being held with greater firmness, and that there are no longer any soft spots in the market. A sale of 200 tons of Southern iron at $13, Birmingham, for No. 2 foundry is noted, but $12.50 is still the ruling price for last half. Northern iron is strongly held at $16.50, at furnace, for this period, with no prices being named for deliveries further ahead. On account of their scarcity, a slightly higher price is asked for low grades. No additional merchant furnace capacity has been blown in in the Chicago District, but several furnaces are ready for the torch as soon as conditions seem to warrant their operation. The following quotations are for July, August and September delivery, f.o.b. Chicago:

Lake Superior charcoal	$19.50 to $20.00
Northern coke foundry, No. 1	17.00 to 18.00
Northern coke foundry, No. 2	17.00 to 17.50
Northern coke foundry, No. 3	16.50 to 17.00
Northern Scotch, No. 1	18.00 to 18.50
Southern coke, No. 1	17.35 to 17.85
Southern coke, No. 2	16.85 to 17.35
Southern coke, No. 3	16.35 to 16.85
Southern coke, No. 4	15.85 to 16.35
Southern coke, No. 1 soft	17.35 to 17.85
Southern coke, No. 2 soft	16.85 to 17.35
Southern gray forge	15.35 to 15.85
Southern mottled	15.10 to 15.60
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.90 to 18.15
Jackson Co. and Kentucky silvery, 6 %	19.90 to 20.40
Jackson Co. and Kentucky silvery, 8 %	20.90 to 21.40
Jackson Co. and Kentucky silvery, 10 %	21.90 to 22.40

(*By Mail.*)

Billets and Rods.—Nothing lower than $28, Chicago, is being done on forging billets. The entire steel output of local producers is being used in their own plants, and for the time being no outside business is sought. Small lot inquiries are more than usually plentiful; among them is one for 500 tons of forging billets on which no offers were made by the local mills. Little new business in wire rods is reported, but specifications against outstanding contracts are freely offered.

Rails and Track Supplies.—While there is some new rail tonnage in sight on which negotiations are pending, none of it was included in last week's business. No difficulty is experienced in securing rail specifications against the orders already booked, as the roads are eager for shipments as fast as they can be made. Track supplies are correspondingly in demand. Only a fair amount of business in light rails is being booked, but prices are evenly held at the following quotations: 40 to 45 lb. sections, $26; 30 to 35 lb. sections, $26.75; 16, 20 and 25 lb. sections, $27; 12-lb. sections, $28, Chicago, less 50c. a ton on lots of 500 tons and $1 a ton on lots over 500 tons.

Structural Material.—While few contracts of significant size have been closed in the past week, a multitude of small orders have been taken by fabricators. The aggregate tonnage comprised in these miscellaneous lots is considerable and, because early delivery is usually desired, they are going largely to the shops with greatest unfilled capacity. Included in the contracts closed by the American Bridge Company are 1600 tons for a warehouse at Texas City, Texas; 5300 tons for a concentrator plant to be built at Colerain, Minn., by the Oliver Iron Mining Company, and 320 tons for an aqueduct and highway bridge for the same interest. One each of three bridges for the Sanitary District Commission, totaling 415 tons, went to the Toledo-Massillon Bridge Company, Fort Pitt Bridge Works and Kenwood Bridge Company. Contracts were awarded by the Thompson-Starrett Company to Paxton, Vierling & Co., Omaha, for 1043 tons required for the Brandeis Theatre and office building, Omaha, and to the American Bridge Company, 1800 tons, for the Newhouse Hotel, Salt Lake City, Utah. An important Chicago building project now under consideration is the proposed erection of a 22-story structure covering the block bounded by Sherman court and Fifth avenue on the east and west and Jackson boulevard and Van Buren street on the north and south. It is designed principally as a furniture manufacturers' exchange, and if the proposed plans are carried out a large tonnage of steel will be required. Mill deliveries on structural shapes are slow, running generally from six to eight weeks behind. Prices continue to harden and are advanced $1 a ton over last week's quotation; 1.58c., base, Chicago, is now the market minimum for shipment from mill.

Sheets.—Prices are steadier than they have been for some time, having reached a condition approximating absolute firmness. There is a fairly heavy demand from both manufacturers and jobbers, the latter, especially, buying in more liberal quantities than has been their custom for many months. The fact that, owing to the filling up of the mills, prompt shipments are no longer available from many sources has induced many buyers to anticipate their requirements further ahead. In the Southwest, where the market has been badly demoralized for some time, prices have firmed up $1 a ton. The local mill is not promising shipments of new orders under six to eight weeks.

Plates.—Some new business in open orders is being booked, but the main tonnage is coming from specifications

which are being offered faster than they can be handled. Only a relatively small part of the plate business entered by the mills has come from the railroads directly or indirectly, but more car orders are being placed and more liberal purchases, expected later on, will probably largely increase the demand for plates from this source. As it is, the mills are not keeping their rolling schedules even with incoming tonnage. Universal plates can be supplied with reasonable promptness, but on sheared plates few mills are able to make deliveries inside of four to six weeks. The market has again advanced $1 a ton, and we are advised that 1.58c., base, Chicago, represents the lowest price at which business will be entered.

Bars.—The fact that there is but little new buying in steel bars is of no significance at this time, since consumers are as a rule well covered for several months by existing contracts. That they expect to have use for all they have purchased is evident from the liberal specifications that are being offered. The demand for bar iron is not increasing much, but prices are firmer owing to the upward tendency of steel bars. The latter are being held $1 a ton higher this week by several producers. We quote steel bars at 1.43c. to 1.48c., base, Chicago, the inside price being likely available on desirable orders; iron bars, 1.35c. to 1.40c., base, Chicago.

Merchant Pipe.—The market has developed nothing of particular interest in merchant pipe, orders for which are being placed by jobbers in about the same volume as for several weeks. Prices are firm and unchanged.

Boiler Tubes.—Jobbers report a growing demand for small shipments from the boiler shops, but the mills are getting little new business in merchant tubes. Railroad buying in locomotive tubes is still confined to current needs for repair work.

Cast Iron Pipe.—Aside from a few small municipal contracts placed last week, no lettings of importance are reported. The city of Milwaukee will open bids July 20 on 2500 tons, and a letting of 1500 tons by the city of Newport, Ky., is scheduled for this week. The ordinary run of small orders is rather heavier than usual and includes a fair demand for gas pipe. We quote, per net ton, Chicago, as follows: Water pipe, 4 in., $27.50; 6 to 12 in., $26.50; 16 in. and up, $25.50, with $1 extra for gas pipe.

Metals.—The entire market is dull and heavy. There is little new demand, but considerable copper is moving on shipments against contracts taken some time ago. Prices, though not quotably lower in either new or old metals, are lacking in firmness. Quotations are as follows: Casting copper, 13⅛c.; lake, 13½c., in car lots, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, car lots, 31c.; small lots, 33c.; lead, desilverized, 4.40c. to 4.50c., for 50-ton lots; corroding, 4.65c. to 4.75c., for 50-ton lots in car lots, 2¼c. per 100 lb. higher; spelter, 5.35c. to 5.45c.; Cookson's antimony, 10½c., and other grades, 9¾c. to 10¼c.; sheet zinc is $7, f.o.b. La Salle, in car lots of 600-lb. casks. On old metals we quote: Copper wire, crucible shapes, 13c.; copper bottoms, 11½c.; copper clips, 12½c.; red brass, 11¾c.; yellow brass, 9½c.; light brass, 7c.; lead pipe, 4½c.; zinc, 4.50c.; pewter, No. 1, 23c.; tin foil, 25c.; block tin pipe, 27c.

Old Material.—In the face of a weak, dispirited demand old material prices hold firm. Impressed with the growing activity in steel mills dealers are resolutely holding on for higher prices, which they believe will be realized in the near future. For the present little tonnage is moving. Three of the Western bar mills have just started up after a shutdown of two weeks, and the active ones have in the meantime been buying only such odd lots as could be picked up to advantage. Under present conditions good round lots of any of the leading grades of either steel or iron would be difficult to secure at the minimum prices quoted. The following prices are per gross ton, f.o.b. Chicago:

Old iron rails	$17.00 to $17.50
Old steel rails, rerolling	15.25 to 15.75
Old steel rails, less than 3 ft.	14.50 to 15.00
Relaying rails, standard sections, subject to inspection	22.50 to 23.50
Old car wheels	16.00 to 16.50
Heavy melting steel scrap	14.00 to 14.50
Frogs, switches and guards, cut apart	14.00 to 14.50
Shoveling steel	13.25 to 13.75

The following quotations are per net ton:

Iron angles and splice bars	$15.00 to $15.50
Iron car axles	18.00 to 18.50
Steel car axles	17.25 to 17.75
No. 1 railroad wrought	13.25 to 13.75
No. 2 railroad wrought	12.25 to 12.75
Springs, knuckles and couplers	13.00 to 13.50
Locomotive tires, smooth	14.75 to 15.25
No. 1 dealers' forge	11.50 to 12.00
Steel axle turnings	9.50 to 10.00
Machine shop turnings	8.00 to 8.25
Cast and mixed borings	5.75 to 6.25
No. 1 busheling	10.75 to 11.25
No. 2 busheling	8.00 to 8.50
No. 1 boilers, cut to sheets and rings	10.50 to 11.00
No. 1 cast scrap	13.25 to 13.75
Stove plate and light cast scrap	11.25 to 11.75
Railroad malleable	12.75 to 13.25
Agricultural malleable	11.25 to 11.75
Pipes and flues	9.25 to 9.75

Philadelphia.

PHILADELPHIA, PA., July 20, 1909.

An active demand continues for finished materials and in some lines a greater tonnage of business has been placed. Pig iron, particularly basic, has also been more extensively sold, and a better volume of business in the foundry grades is before the trade. Prices have been advanced in a number of instances and sales made at the top of the market. The situation shows increasing strength, and a decidedly optimistic view regarding the future is expressed by leading producers as well as consumers.

Pig Iron.—Considerably more activity is to be noted in the demand for pig iron. Transactions in basic iron have been the leading feature. Sales aggregating 20,000 tons have been reported for prompt and fourth quarter delivery at $16, delivered, an advance of 50c. a ton over recent sales. Producers of basic are pretty well sold up to their present capacity and several have withdrawn from the market. Practically all of the Eastern steel mills have made inquiries during the week for basic for delivery in the first quarter of 1910, but sellers are not disposed to book for such delivery, and while no price has been quoted, it has been intimated that $1 advance over the present price might be named. While there appears to be a little temporary scarcity of basic for early delivery, a number of Eastern producers being behind in shipments, additional tonnage will shortly go in. The Oxford Furnace of the Empire Steel & Iron Company will be blown in this week, while the new Crane stack of the same company is expected to be ready to go in August 1, the latter having a capacity of 250 to 300 tons a day. Foundry iron shows a more active movement. The Pennsylvania Railroad is in the market for an aggregate of some 8000 tons of foundry iron, covering both coke and charcoal, for fourth quarter delivery; a local jobbing foundry is asking for 1000 tons of No. 2 plain foundry, and inquiries for several lots of a few hundred tons each are reported. Sales recently have been principally in small lots for fairly prompt shipment, at prices ranging from $16.50 to $17 for No. 2 X. The majority of the sellers maintain $16, furnace basis, for this grade, although one eastern Pennsylvania seller now holds at $16.25, furnace, and while some transactions have, owing to favorable freight rates, been made at $16.50, the bulk of the business has been at $16.75; in a few cases small lots have been done at $17, delivered. Some inquiry for moderate lots of foundry iron for the first half of next year are reported, but sellers as a rule still refuse to quote on such deliveries. The cast iron pipe foundries are still in the market for fair lots of low grade iron, but little business has been done, sellers holding pretty firmly at $15.50, delivered, for these grades. Virginia foundry irons are somewhat firmer, but sales have been light. Southern iron has also been quiet and at the ruling prices is not interesting buyers in this territory. A better movement in forge iron is noted, one sale of 3000 tons at $15.65, delivered over the balance of the year, being reported, while moderate lots have been sold at prices ranging from $15.50 to $15.75, delivered. There has been no movement in low phosphorus iron. Prices on practically all grades are decidedly firmer. Furnaces prefer to confine themselves to business for comparatively early delivery, and, although the buyers are feeling the market for early 1910 deliveries, no quotations come out. For delivery in buyers' yards, eastern Pennsylvania and nearby points, the following range is named for standard brands, third quarter delivery:

Eastern Pennsylvania, No. 2 X foundry	$16.50 to $17.00
Eastern Pennsylvania, No. 2 plain	16.00 to 16.50
Virginia, No. 2 X foundry	16.75 to 17.00
Virginia, No. 2 plain	16.50 to 16.75
Gray forge	15.50 to 15.75
Basic	16.00
Low phosphorus	19.50 to 20.00

Ferromanganese.—Little demand is noted from consumers in this territory and prices are practically unchanged. Sales of some little tonnage for Western delivery are reported, however, at slightly lower prices than those quoted here, which for last half delivery range from $41 to $42, Baltimore, and $42.50 to $43 for delivery during the first half of next year.

Billets.—There has been a much better movement. Buyers have placed considerable business, comprising several lots ranging upward of 1000 tons, for prompt delivery. Sellers still refuse to accept forward business at the present range of prices for prompt shipment, which for ordinary rolling steel range from $25.50 to $26, delivered, forging steel taking the usual $2 a ton advance, the customary extras applying for high carbons and special sizes.

Plates.—A steadily increasing demand is noted. Inquiries are numerous, and are confined to no particular class of material. The largest inquiries, however, have been for plates for bridge work. Orders are increasing in size, and mills in this territory are closely approaching normal production. Prompt deliveries cannot be had as freely as a few weeks ago, and some mills have advanced prices $1 a ton for ordinary run of business, and are taking orders freely at the higher level. Little disposition is shown to take orders for large tonnages, although several have been offered, one being

for 10,000 tons of bridge plates; nor are mills inclined to book business covering extended delivery at the present price level, which ranges from 1.45c. to 1.50c. for carload lots for prompt delivery in this locality.

Structural Material.—A good volume of business is before the trade. Several heavy tonnages are under consideration, but no large lots have been placed. There is a very good run of miscellaneous business, from carloads up, for fairly prompt delivery, and mills are pretty fully engaged. Prices, while no higher for plain material, show a distinct stiffening as far as fabricated work is concerned. For prompt delivery, plain material quotations range from 1.45c. to 1.55c., delivered, dependent on specification and tonnage.

Sheets.—A better run of orders of larger size is noted. Consumers show more disposition to place orders, which, however, are still principally for prompt shipment. Mills are running full and have a better showing on their books. Prices are firm and range as follows for prompt lots delivered in this territory: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c.; No. 28, 2.80c.

Bars.—There has been some improvement in the demand, and mills could no doubt book considerable business if orders for extended delivery were accepted. The disposition, however, is to take orders for prompt delivery only at the present price level, which appears to be comparatively firm at 1.40c., Eastern mill, equal to 1.45c. to 1.50c., delivered. A fair demand for steel bars is reported at unchanged prices.

Coke.—Some small sales of foundry coke for near future delivery are reported at unchanged prices. Furnace coke is dull, but is expected to be more active in view of increasing blast furnace operations in the near future. Prices generally are somewhat firmer and range about as follows for delivery in this vicinity:

Connellsville furnace coke	$3.90 to $4.10
Foundry coke	4.35 to 4.50
Mountain furnace coke	3.50 to 3.70
Foundry coke	3.80 to 4.10

Old Material.—The undertone of the market is stronger. While sales of heavy melting steel have not been extensive, mills are willing to pay $16 delivered for this grade. Very little comes out, however, at that figure, sellers holding what they have for higher prices. There has been a better demand for the rolling mill grades of scrap, and prices for such material show slight advances on small purchases. The market on the whole is firmer and prices for delivery in buyers' yards, eastern Pennsylvania and nearby territory, while to some extent nominal, range about as follows:

No. 1 steel scrap and crops	$16.00 to $16.50
Low phosphorus	20.00 to 20.50
Old steel axles	21.50 to 22.00
Old iron axles	23.25 to 24.00
Old iron rails	19.50 to 20.50
Old car wheels	15.00 to 15.50
Choice No. 1 R. R. wrought	17.50 to 18.00
Machinery cast	14.75 to 15.25
Railroad malleable	14.50 to 15.00
Wrought iron pipe	15.50 to 16.00
No. 1 forge fire scrap	14.00 to 14.50
No. 2 light iron	9.50 to 10.00
Wrought turnings	12.50 to 13.00
Stove plate	12.50 to 13.50
Cast borings	10.50 to 11.00
Grate bars	13.50 to 13.75

Cleveland.

CLEVELAND, OHIO, July 20, 1909.

Iron Ore.—The market is becoming a little more active. Several good sized sales were made during the week, and fair inquiries are pending. Taken altogether, the outlook in the ore trade is satisfactory. Early in the season estimates were made that the total movement would reach 35,000,000 tons, but these figures were regarded as pretty high at the time. Now, however, it is generally believed that the shipments will exceed 35,000,000 tons. More boats have been put in service during the past week, and shipments which have been heavy all the month are expected to reach 6,000,000 tons during July. Although ore sales up to the present time have been very satisfactory, little has been booked for shipment to Eastern furnaces. Prices at Lake Erie docks, per gross ton, are as follows: Old range Bessemer, $4.50; Mesaba Bessemer, $4.25; old range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig Iron.—A fairly good volume of inquiry for foundry iron is reported for last half delivery, in lots ranging from 200 to 500 tons and a number of sales have been made. Prices show a stiffening tendency. There are a few inquiries for iron for the first half of 1910 delivery, and some of the furnaces are willing to take on tonnage at $15.50, at furnace, for No. 2. This price is now being generally quoted by local furnaces for outside shipment for any delivery, although some iron was sold during the week to outside consumers at $15, at furnace, for No. 2 for the last half. Among other sales we note 300 tons of No. 2 at $15.25, at furnace, for last quarter delivery, and 400 tons at $15.50 for first half delivery, both being for outside shipment. Two local stove plants are in the market for 1000 tons of No. 2 foundry each, for last half delivery. In the Valley $15.25 to $15.50 is generally asked for No. 2 for the last half. The local foundry situation is in a satisfactory condition, and the melt during the third quarter is expected to show an improvement over the second quarter. We quote, delivered, Cleveland, for the last half as follows:

Bessemer	$16.40
Northern foundry, No. 1	$16.25 to 16.50
Northern foundry, No. 2	15.75 to 16.00
Northern foundry, No. 3	15.25 to 15.50
Southern foundry, No. 2	16.85 to 17.10
Gray forge	14.75 to 15.00
Jackson County silvery, 8 per cent. silicon	20.05

Coke.—Some inquiry has come out for prices on furnace coke for the first half of next year from furnacemen who are feeling the market, but producers would not quote prices that would be attractive at the present time to buyers. The market is generally quiet and prices are about stationary. We quote standard Connellsville furnace coke at $1.65 per net ton at oven, for spot shipment, and $1.75 to $1.80 for the balance of the year. Standard 72-hr. foundry coke is held at $1.80 to $2 for spot shipment and $2 to $2.40 for the balance of the year.

Finished Iron and Steel.—Specifications on contracts continue fairly good in nearly all lines and some of the mills are so far behind on deliveries that they are making little effort to get new business. While orders are not so numerous as a few weeks ago, some of the mill agencies report that specifications are for larger tonnages than early in the month. Not much new business is coming out, but a better demand is expected as soon as inventories are completed. The bulk of the tonnage ordered is steel bars, nearly all of the bar consumers being under contract. Prices are firm, most of the mills quoting 1.30c., Pittsburgh, as the minimum price on steel bars and 1.40c. on plates and structural material. The local plate and sheet mills are crowded with orders. The demand for iron bars shows an improvement, and the Empire rolling mill of this city started up July 19 after a shutdown of only two weeks. It is expected that the Union rolling mill will start up about August 1. Local mills quote iron bars at 1.50c., Cleveland. They are getting no business at present from the West. The demand for sheets has improved materially and is now good for black and galvanized as well as for blue annealed. Some of the mills are considerably behind on deliveries. During the past few weeks many contracts for sheets for delivery until October 1 were closed, and specifications are coming in freely on these contracts. Sheet prices have stiffened up and very little price cutting is now reported. The demand for light rails continues good and prices are being maintained. We note the sale of 120 tons for shipment to Alaska. A local mill agency has received an order for 250 tons of standard sections from a traction line. The demand for shafting is still good and prices are firmer. The Board of Public Service, Cleveland, will receive bids August 4 for 2000 tons of cast iron pipe for the water works department. Local jobbers report that their volume of orders for shipment from warehouse continues heavy in nearly all lines.

Old Material.—After being almost stagnant for three or four weeks, the market is beginning to show some activity. Prices are firmer, and heavy melting steel, borings and busheling scrap have advanced 50c. a ton. While not many sales have been made to consumers during the week, some inquiries are coming out and there have been more transactions among dealers. Dealers are looking for better prices soon and most of them are holding their scrap for an advance. The list sold by the Lake Shore Railroad last week brought good prices. The Norfolk & Western has its usual list out this week. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$15.00 to $15.50
Old iron rails	16.50 to 17.00
Steel car axles	19.00 to 19.50
Old car wheels	15.00 to 15.50
Heavy melting steel	14.00 to 14.50
Relaying rails, 50 lb. and over	21.50 to 22.50
Agricultural malleable	12.50 to 13.00
Railroad malleable	14.00 to 14.50
Light bundled sheet scrap	8.00 to 8.50

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$17.50 to $18.00
Cast borings	7.00 to 7.25
Iron and steel turnings and drillings	9.00
Steel axle turnings	10.00 to 10.50
No. 1 busheling	12.50 to 13.00
No. 1 railroad wrought	13.50 to 14.00
No. 1 cast	12.50 to 13.00
Stove plate	10.50 to 11.00
Bundled tin scrap	10.00 to 10.50

Denatured alcohol falls so short of expectations as to large production in this country that the Internal Revenue Bureau has dropped 17 inspectors and four revenue agents because their services are not needed in looking after this product. The output is growing steadily but slowly.

Pittsburgh.

PARK BUILDING, July 21, 1909.—(*By Telegraph.*)

Pig Iron.—A sale of 25,000 tons of Bessemer pig iron was made last week by the Bessemer Pig Iron Association to the Youngstown Sheet & Tube Company at the reported price of $15.50, at Valley furnace. Reports are current, emanating from Cleveland, that the United States Steel Corporation will buy 100,000 tons of Bessemer pig iron for last half of the year delivery. Prices are firm. We quote standard Bessemer iron at $15.50; basic, $15; malleable Bessemer, $15 to $15.25; No. 2 foundry, $15.25, and gray forge at $14, all at Valley furnace, carrying a freight rate of 90c. a ton to the Pittsburgh District.

Steel.—There is a decided scarcity in the supply of both Bessemer and open hearth steel billets and prices are very firm and higher. While not much steel is sold in the open market, most consumers being covered by regular contracts, consumers are finding it difficult to buy billets for prompt delivery. We have advanced prices and now quote Bessemer billets at $24; basic open hearth billets, $24.50 to $25, and sheet bars in random lengths at $25 to $25.50, all f.o.b. Pittsburgh mills, full freight to destination being added. Forging billets are scarce and higher and we now quote these at $28, Pittsburgh. One leading interest has turned down inquiries for over 15,000 tons of forging billets at $27 in the past week. All indications point to a further scarcity in the supply of steel, and if the volume of new business in finished material continues to increase, there will not be enough steel to go round.

(*By Mail.*)

Only the most cheerful reports are given out this week by sales agents and other officials of the large iron and steel interests. In May and June it was the general expectation that new business in July and August would fall off to some extent, and perhaps there would also be a slight recession, or at least no advances, in the price of both raw and finished materials. These expectations have not been realized, but, on the contrary, prices of pig iron, steel billets and all forms of finished iron and steel are very strong today and give every indication of going higher. The recent heavy sales of Bessemer pig iron to the Jones & Laughlin Steel Company and the Youngstown Sheet & Tube Company have firmed up the market on that grade of iron, and it is strong at $15.50, minimum, at Valley furnace, with some sellers holding for $15.75 to $16. There is a decided scarcity in the supply of Bessemer and open hearth billets and sheet and tin bars, and prices this week are about $1 a ton higher than last week. Very little steel is for sale in the open market, and producers that are in a position to make prompt deliveries can readily get $24 for Bessemer billets and $25 or more for open hearth. Sheet and tin bars have sold at $25 a ton with full freight to destination added, and they are scarce. Actual orders and specifications against contracts entered by the mills so far this month are fully as heavy as in the same period in June, and on some lines are heavier. There is not a disquieting feature in the situation, but, on the contrary, the whole market is active and strong. The large steel interests are operating very close to 100 per cent. of their capacity and have a good deal of business on their books against which buyers are specifying most freely.

Ferromanganese.—A heavy tonnage of foreign ferromanganese has been sold for delivery in last half and through first half of next year. We note sales of 500 to 600 tons of foreign 80 per cent. at $41.50 to $42, seaboard, the freight rate to Pittsburgh being $1.95 a ton. We quote foreign 80 per cent. for delivery over balance of this year at $41.50 to $42, seaboard.

Ferrosilicon.—The Carnegie Steel Company is a persistent buyer of ferrosilicon, and in the past week has taken several carloads on the basis of about $62, Pittsburgh, for prompt shipment. We quote 50 per cent. ferrosilicon at that price.

Rods.—The consumption of rods by the wire mills is heavier than usual at this season of the year. Buyers are specifying freely against contracts placed prior to May 15, when prices were $2 a ton lower than they are now. Several fair sized lots of Bessemer and open hearth rods have been sold at $29, Pittsburgh. We quote Bessemer, open hearth and chain rods at $29, Pittsburgh.

Muck Bar.—The signing of the Amalgamated scale by the bar iron mills and the greater activity in the bar iron market have brought out some inquiry for muck bar, and a sale of about 1000 tons is reported at close to $28, Pittsburgh. We quote the market on best grades of muck bar made from all pig iron at $28, Pittsburgh.

Skelp.—In sympathy with other lines of finished material, the demand for both iron and steel skelp is active, the market is firm and prices are slightly higher. We quote grooved steel skelp at 1.35c. to 1.40c.; sheared, 1.45c. to 1.50c.; grooved iron, 1.55c. to 1.60c., and sheared iron skelp, 1.60c. to 1.65c., all for ordinary widths and gauges, f.o.b. Pittsburgh.

Steel Rails.—The report that the La Belle Iron Works had bought the plant of the Ohio Rail Company at Newark, Ohio, is untrue. This information was given out on apparently reliable authority, but officials of the La Belle Iron Works deny that their company has in any way, directly or indirectly, bought this plant. In the past week the Carnegie Steel Company has received some small orders each for less than 1000 tons of standard sections, and has also received some specifications against contracts aggregating a fair tonnage. In light rails the company has received new orders and specifications against contracts for close to 2500 tons. Prices on light rails are very firm and another advance in the near future is predicted. Some heavy inquiries are in the market for splice bars, and this leads to the belief that before long the roads making such inquiries may be in the market for rails. The same company has made some fairly heavy sales of splice bars at the full price of 1.50c., Pittsburgh.

Plates.—Reports that the Pennsylvania Railroad had asked bids on 20,000 all steel freight cars are untrue. It is probable that it will buy about 5000 steel cars if deliveries can be made on that number this year, but requests have not yet gone out for bids. The Baltimore & Ohio has asked bids on 2000 steel end, self-clearing coke cars, 1000 drop-end gondolas, 1000 box cars, 500 ventilated box cars and 500 refrigerator cars. Nothing is known here of the reported inquiry of the Chicago & Northwestern for 6000 cars. The plate market is active and the two leading makers are running their mills practically full. The city of San Francisco is using welded pipe in its contract for high pressure water service, but some work is coming up in Seattle which will probably require riveted pipe. The market is firm and we quote ¼-in. and heavier plates at 1.35c. minimum for large orders and 1.40c. on small orders, f.o.b. Pittsburgh.

Structural Material.—The market on plain material is very strong, but prices for fabricating work continue relatively low, and all the structural concerns have more or less work on their books, on which there is little or no profit. The Fort Pitt Bridge Works has contracted for the steel buildings for the new open hearth steel plant and blooming mill, also the floor plates in the open hearth plant for the Jones & Laughlin Steel Company, at Aliquippa, Pa,, 5000 to 5500 tons. The McClintic-Marshall Construction Company has taken the new tube building for the Republic Iron & Steel Company, at Youngstown, 1100 tons; also the steel building for the extension to the sheet plant of the Youngstown Sheet & Tube Company, 800 tons; also about 500 tons of bridge work for the Denver & Rio Grande, and 200 tons of bridge work for the Baltimore & Ohio. The absolute minimum on beams and channels up to 15 in. is 1.35c., while 1.40c. is being quoted on small lots.

Bars.—The Republic Iron & Steel Company has signed the Amalgamated scale, and all its bar iron mills, which were shutdown on July 1, have again started up and are running full time. The demand for both iron and steel bars is active, and specifications against contracts are coming in so fast that several of the leading steel bar mills are from four to six weeks back on deliveries. The Republic Iron & Steel Company, Jones & Laughlin and Cambria are holding bars at 1.30c., minimum, but are not anxious to take on much tonnage at this price, and, in fact, are refusing to take contracts offered. The Carnegie Steel Company is still quoting 1.25c. on steel bars on very desirable tonnage, but will probably advance its price not later than August 1 to 1.30c. and possibly higher. We quote steel bars at 1.25c., minimum, but the general market is correctly represented by the quotation of 1.30c., at mill, Pittsburgh. Common iron bars are very firm at 1.45c. to 1.50c., Pittsburgh.

Tin Plate.—Owing to the lateness of the season, the demand for tin plate is not quite as heavy as it was, but the mills have a very large amount of business on their books which will take them several months at least to clear up. The American Sheet & Tin Plate Company has started five hot mills at its American Works, at Elwood, Ind., and expects this week to start up some mills at its Shenango Works, at New Castle, Pa. The Amalgamated Association is making a desperate effort to hold the union mills of the American Sheet & Tin Plate Company and claims that it has organized the men at one of the tin mills at New Kensington, Pa. The company's Demmler and Monongahela works are both running full and with nonunion men. It is now running over 40 per cent. of its serviceable tin plate capacity in spite of the strike. The independent tin plate mills are all running practically full, with enough orders ahead to carry them well through the summer months. Prices are very firm, and we quote 100-lb. coke plates at $3.40 per base box, f.o.b. Pittsburgh.

Sheets.—We can report a very heavy demand for black and galvanized and also for roofing sheets. The whole sheet market is in satisfactory condition. Prices are much firmer

than they were. While slight concessions are still obtainable from some mills on desirable orders, the market is being well maintained. The American Sheet & Tin Plate Company is operating over 85 per cent. of its serviceable sheet mill capacity and has not been seriously inconvenienced by the strike. Owing to the higher prices for sheet bars, which have gone up fully $1 a ton, it is not unlikely that prices of sheets may advance before long. We quote one-pass box annealed black sheets, No. 28 gauge, at 2.20c., and No. 28, galvanized, at 3.25c. The regular price of painted roofing sheets, No. 28, is 1.55c. per square, and of galvanized, No. 28, is 2.80c. per square, for 2½-in. corrugations.

Hoops and Bands.—Orders for hoops and bands are more plentiful and prices are decidedly firmer. We quote steel hoops at 1.40c. to 1.45c. and bands at 1.15c. These prices are being firmly maintained.

Shafting.—For the first time in its history the shafting department of the Republic Iron & Steel Company at Youngstown is being operated double turn. The demand for shafting is very active and heavy, and buyers are specifying freely against contracts. We quote cold rolled shafting at 60 per cent. off in carloads and 55 in less than carloads, delivered in base territory. These prices are absolute minimum of the market, and are, we are advised, being firmly held by the manufacturers.

Spikes.—The demand is active for spikes in quantities ranging from carloads up to 1000 kegs. Prices are very firm, and while $1.60 is being quoted on desirable inquiries on sizes 5½ x 9-16 in., the general market is $1.65, and on the smaller sizes is $1.75 to $1.80, base, in carload and larger lots, with an advance of about 5 cents per keg for small lots.

Merchant Pipe.—So far in July the new demand for merchant pipe has been fully as heavy as in the same period last month. The leading pipe mills are operating to practically full capacity and have a large amount of business on their books. Inquiries for large oil and gas lines are numerous, but are being closed up very slowly. It is evident that unless contracts for some of these projected lines are soon placed, the mills will not be able to make deliveries wanted, as they are all filled up for the next several months on the larger sizes. Prices are very firm, and it is stated that the recent advance of 1 point, or $2 a ton, on iron pipe is being firmly held. The official discounts on black steel pipe ¾ to 6 in. are 81 and 5 and on iron pipe ¾ to 6 in. 77 and 5 in carload and larger lots to the largest trade.

Boiler Tubes.—Although the demand is more active than for some time, both for locomotive and merchant tubes, the mills could take care of a much larger amount of business than is being offered. Regular discounts on both locomotive and merchant tubes are still being shaded.

Iron and Steel Scrap.—The active conditions prevailing in the steel works and rolling mills are reflected in the demand for scrap, which is very heavy, and prices are firm. The mills that closed down July 1 for inventory and repairs, and also the bar iron mills of Republic Iron & Steel Company, which closed pending the settlement of the Amalgamated wage scale, are all in active operation again, and the consumption of scrap is much heavier than probably at any previous time for nearly two years. All offerings of heavy steel scrap are taken up about as fast as made, and this material for delivery at consuming points, such as Steubenville, Monessen, Follansbee, Sharon, Leechburg and in the Pittsburgh District, is very firm at $16 to $16.25 per gross ton, some sellers holding for as high as $16.50. Cast iron borings are held at $9.50 to $9.75, while bundled sheet scrap is very firm at close to $15, delivered at consuming point. No. 1 cast scrap is $15 to $15.25; No. 2, $14.50; sheet bar crop ends, $16.75 to $17; No. 1 railroad malleable, $14.75 to $15; grate bars, $12 to $12.50; No. 1 busheling scrap, $14 to $14.25; No. 2, $12 to $12.25; low phosphorus melting stock, 0.04 and under, $19.50 to $20; rerolling rails, $16.50; old car wheels, $16 to $16.25; locomotive axles, $25 to $26; locomotive tires, $18 to $18.25; machine shop turnings, $11.25 to $11.50; iron axles, $24.50 to $25; steel axles, $20; stove plate, $11 to 11.25. These prices are per gross ton, f.o.b. cars, Pittsburgh, unless otherwise stated.

Coke.—As yet the promised statement regarding the project for consolidating 50 to 60 of the leading coke plants in the Connellsville and other coke regions has not materialized, but it is now looked for not later than August 1. There is a general improvement in demand for both furnace and foundry coke, and prices are stronger. Standard makes of furnace coke for spot shipment are held at $1.65 to $1.70, while on contracts for balance of the year from $1.75 to $1.80 per net ton, at oven, is being quoted. Standard makes of 72-hr. foundry coke for prompt shipment are held at $1.85 to $1.90 per net ton, at oven, and on contracts for last half of the year from $2.15 up to $2.40 per net ton, at oven, is being quoted. The output of coke last week in the Upper and Lower Connellsville region was about 315,000 tons. The Frick Coke Company is now operating practically all of its coke plants full time, and this is also true of a number of other leading producers. There are 38,476 ovens in the Upper and Lower Connellsville region, and last week 29,683 ovens were active and 8793 were idle.

Cincinnati.

CINCINNATI, OHIO, July 21, 1909.—(*By Telegraph.*)

The week has opened with a strong undertone to all iron and steel markets save old material, in which there is little interest. Consumers are taking iron on contract in steadily increasing tonnage. Since the adoption of the new building code the building inspector's office is busy with applications, among which are a number for heavy structures requiring iron and steel. Special interest is manifested in inquiries for next year's prices on all lines. Southern Ohio furnaces have advanced all prices to-day. The outlook in the tool trade daily grows brighter.

Pig Iron.—For the remainder of the last half southern Ohio furnaces are now all on a $15, Ironton, basis for No. 2, announcement of the advance being made to-day. Columbus is said to be asking 25c. premium over this. Inquiries for next year are numerous, but aside from the willingness of a northern Ohio interest to quote $16, no sign is made by other Northern producers and no satisfaction at all is given by Southern makers. For fourth quarter Southern furnaces are asking $13, Birmingham, and one or two Northern furnaces are limiting the $15 deliveries to October. There are some good inquiries for basic from steel makers in this territory, one in southern Ohio wanting 2500 tons for fourth quarter. Malleable is also in good demand, a car building interest seeking some, which is said to have been obtained, at least part, at last week's prevailing prices. A south central Ohio concern is also on the market for malleable. Both basic and malleable are quotable on a $15, Ironton, basis. Prices on the Southern basic product are not available at this time. Foundry irons are in good demand and considerable negotiation is in progress between furnaces and agents on desirable tonnages. A south central Ohio concern wants 300 tons of No. 2 and 3 Northern foundry. A local branch of a large pump manufacturer inquires for prices on 500 tons of Southern for early delivery. An Indiana manufacturer seeks 500 tons of Southern No. 3, with an offer of $11.50 for the last half. Some good inquiries are also reported from Chicago and Pittsburgh territory. Low grades are still scarce and in good demand. Charcoal irons are also in demand. High silicons remain unchanged in price. Rumors of new furnaces, both North and South, as early possibilities are heard in iron circles. For prompt shipment and third quarter, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry	$16.25
Southern coke, No. 2 foundry	15.75
Southern coke, No. 3 foundry	15.25
Southern coke, No. 4 foundry	14.75
Southern coke, No. 1 soft	16.25
Southern coke, No. 2 soft	15.75
Southern coke, gray forge	14.50
Ohio silvery, 8 per cent. silicon	19.70
Lake Superior coke, No. 1	16.70
Lake Superior coke, No. 2	16.20
Lake Superior coke, No. 3	15.70
Standard Southern car wheel	$22.25 to 23.75
Lake Superior car wheel	20.50 to 21.00

(*By Mail.*)

Coke.—Some furnaces are contracting for future needs, but the inclination to sell for forward delivery is growing less daily. Furnace grades are selling at $1.60 to $1.75, at oven, for spot and contract delivery. The talk of blowing in idle furnaces is encouraging the coke producers and strengthening the price. Foundry coke is in good demand; Connellsville standard grades ranging from $2 to $2.25, at oven, and Wise County about the same. Pocahontas foundry ranges from $1.90 to $2.15.

Fluorspar.—This product of the Middle States is becoming stronger day by day. With the prospect of a $3 net ton duty imposed on the foreign article the producers estimate a demand of 50,000 to 60,000 tons more for America and much more interest in undeveloped mines in Illinois, Kentucky and Missouri. A local concern represents one of the largest producers of this mineral, which is used extensively by open hearth steel makers, glass manufacturers and others. The quoted price is $5 per ton, f.o.b. Evansville, Joppa or Shawneetown.

Old Material.—Invoicing is in progress and little change is to be recorded; if any thing, prices are a trifle weaker. Not much is expected before fall, although some mills are still buying heavy melting steel. We quote dealers' prices to the trade f.o.b. Cincinnati as follows:

No. 1 R. R. wrought, net ton	$13.50 to $14.50
Cast borings, net ton	6.00 to 7.00
Heavy melting steel scrap, gross ton	13.00 to 14.00
Steel turnings, net ton	8.50 to 9.50
No. 1 cast scrap, net ton	13.00 to 14.00
Burnt scrap, net ton	9.50 to 10.50
Old iron axles, net ton	17.50 to 18.00
Old iron rails, gross ton	15.00 to 15.50
Old steel rails, short, gross ton	13.50 to 14.00
Old steel rails, long, gross ton	13.50 to 14.00
Relaying rails, 56 lb. and up, gross ton	21.50 to 22.00
Old car wheels, gross ton	14.50 to 15.00
Low phosphorus scrap, gross ton	13.50 to 14.00

Finished Iron and Steel.—All representatives of finished iron and steel report a strong market with prices firm

at 1.30c., Pittsburgh, on steel bars, and 1.35c. to 1.40c. on structural shapes. Small independent mills are reaping a harvest on hurry orders which cannot be handled by the larger interests because of being booked so far ahead. A good sized tonnage of plates at 1.40c. was refused by representatives of a large independent interest to-day for delivery over the remainder of the year. Mills seem disinclined to contract at current prices, and the prediction is made that before the close of the year prices will be within close range of those that ruled prior to the February break.

St. Louis.

ST. LOUIS, July 19, 1909.

A gain of $8,000,000 in the personal tax returns and a general increase in merchants' licenses have put St. Louis on easy street financially. The Comptroller will announce the marketing of $4,700,000 municipal bonds this week, which will clean up the $11,200,000 bond issue. Bids have been asked for the contract to erect the municipal courts building and the additions to the City Hospital. The bids for the latter building, estimated to cost $800,000, will be opened August 17, and the municipal courts building August 10. The municipal courts contract is to be for the building under roof, with doors, windows, &c., and finished outside, the estimate on the work to be done being $1,000,000. No contract will be let on the jail building until the courts structure is completed. The jail will cost about $200,000, while $300,000 additional will be required to install the marble work, finish the plumbing, interior decorations, &c. Another important city job will be the biggest street contract ever awarded in St. Louis, namely, 11 miles of streets to be paved at a cost of $600,000. Bids will be asked during the present week.

Coke.—The market for coke is more active, though the volume of orders is still moderate. For the more distant deliveries an advance of 10c. per ton is now being secured. This refers to business for 1910. Not long ago quite a number of orders were booked at $2.25, but offers of this figure have been declined. We quote for best Connellsville $2.25, f.o.b. oven, shipment over the balance of the year, though some brands can be bought for $2.15.

Pig Iron.—Inquiry among the leading sales agencies indicates that with most of them not much new business is being booked, at least no large orders. Specifications, however, are coming in well and there is still considerable inquiry. Among the parties in the market is a concern in want of 3500 tons of basic iron for shipment over last quarter and first quarter of 1910. One broker stated that a purchase of 1000 tons of malleable iron for shipment over the last half was to be closed during the day. Another house reports an inquiry for 3000 tons of Northern charcoal iron for shipment over the last half. We do not yet hear of any prices being made for 1910, although inquiry for that shipment seems to be on the increase—specifically, for the first quarter—but the indisposition to name prices so far ahead still continues. An optimistic feeling of a pronounced character is quite in evidence in all the offices, notwithstanding that in some of them they admit it is quiet, yet this is owing to the advance in the market and to the large sales in the past few weeks. The market appears to be in a strong position and $12.50, Birmingham, is quoted as bottom for No. 2 foundry, for any delivery, either immediate or through the balance of the year.

Finished Iron and Steel.—The leading steel interest reports the principal feature of the situation consists in the marked increase in inquiry from railroads, particularly for standard rails. Among other sections in this department is that of Oklahoma, where some important railroad projects are being financed. There is also inquiry from traction lines; among others, one from Mexico, Santa Fe and the Perry Traction Company of this State. The demand for bar iron and steel is good and prices are firm.

Lead, Spelter, Etc.—Lead is ruling weak, with light inquiry; we quote 4.15c., East St. Louis. Lead ore is quiet; held at $50 per ton, Joplin base. The spelter market is steady and quiet at 5.22½c., East St. Louis. The zinc ore market is inclined to be weak, with price ruling at $43 per ton, Joplin base. Tin is ⅛c. off; antimony, ⅛c. off; copper, ⅛c. off. The demand for the finished product is better, but for some reason or other prices are a little lower.

Old Materials.—The tone of the market is ruling very strong and in consequence dealers are holding scrap material at what they believe conditions warrant, while on the other hand consumers are inclined to regard their views as excessive. The dealers claim to feel unconcerned, as they are aware that usually at this season many plants are engaged in taking stock or in making repairs, the weather being unfavorable during the heated term for operating full. Relaying rails are in light offering and stocks are moderate. This applies to both light and heavy sections; prices are firm, with indications of advancing. The only railroad list out this week is the Mobile & Ohio, 1800 tons. We quote as follows, per gross ton, f.o.b. St. Louis, prices being to some extent nominal:

Old iron rails	$15.00 to $15.50
Old steel rails, rerolling	14.50 to 15.00
Old steel rails, less than 3 ft.	14.00 to 14.50
Relaying rails, standard sections, subject to inspection	24.00 to 24.50
Old car wheels	15.50 to 16.00
Heavy melting steel scrap	14.00 to 14.50
Frogs, switches and guards, cut apart	14.00 to 14.50

The following quotations are per net ton:

Iron fish plates	$13.25 to $14.25
Iron car axles	18.50 to 19.00
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	12.50 to 13.00
Railway springs	12.50 to 13.00
Locomotive tires, smooth	12.50 to 13.00
No. 1 dealers' forge	9.50 to 10.00
Mixed borings	5.75 to 6.25
No. 1 boilers, cut to sheets and rings	9.50 to 10.00
No. 1 cast scrap	12.50 to 13.00
Stove plate and light cast scrap	9.50 to 10.00
Railroad malleable	12.50 to 13.00
Agricultural malleable	11.50 to 12.00
Pipes and flues	9.50 to 10.00
Railroad sheet scrap	8.50 to 9.50
Railroad grate bars	9.50 to 10.00
Machine shop turnings	8.00 to 8.50

The German Iron Market.

BERLIN, July 9, 1909.

The iron market continues to disappoint hopes and predictions of better times ahead. Several weeks ago, indeed, a Duesseldorf newspaper reported a "substantial improvement" in the business of the Steel Syndicate, but a few days later the management of that great combination issued a statement toning down considerably the reported improvement. It admitted that it had on hand orders of class A goods (steel rails, structural forms and billets), running about 200,000 tons above the orders of a year ago, but this improvement was wholly from the export market, while home orders for heavy rails were about 100,000 tons short of last year's figures.

So far as the general situation is concerned, it is now admitted on all sides that conditions have grown rather worse within a month. This is particularly true of the pig iron market, which naturally must be taken as the basis and index of the trade in general. It begins to be acknowledged everywhere in the market that the active buying of iron last fall, after the syndicates broke down, was in a great measure speculative. Dealers thought the sharply reduced prices of that time offered them an exceptional opportunity to secure large stocks of iron which they would be able to dispose of later with a good profit. These operators have been wofully disappointed in their speculation. Prices are now lower than when they placed their contracts. Hence they have been extremely dilatory in taking from the furnaces the iron contracted for, and in not a few cases the latter have been compelled to resort to legal steps to get redress. The dealers plead that they are accumulating stocks of pig which they are unable to sell, as an excuse for their delay in taking over iron upon contract.

The situation of the independent furnaces remains in a high degree unsatisfactory, and even in some cases precarious. The great mixed works feel that they must keep their furnaces in blast in order to maintain a steady power supply in their steel mills from the furnace gases, but even these great concerns have accumulated greater and greater stocks of iron above their own demands. It is not to be wondered at, therefore, that even their stocks have begun to exert a pressure upon prices, not to mention those of the independent furnaces. When several weeks ago an effort was made to get the various furnaces in the great Rhenish-Westphalian District to agree to take no contracts beyond September 30 at present prices, it was the refusal of two or three of these big mixed works to join the movement which caused its failure.

Not only did that proposed agreement break down, but the furnaces are now bidding actively for contracts for 1910 at lower prices than had hitherto prevailed, and the furnaces of the mixed works are taking their full share in these efforts to get contracts at cut prices. Under these circumstances prices have dropped to a lower level than yet known since the present period of depression set in. Prices at the furnaces are now 57 to 59 marks for No. 1 foundry, 56 to 58 for No. 2, 57 to 60 for German hematite, 59 to 60 for Bessemer, 59 to 60 for high grade puddling at Siegen, 63 to 66 for spiegeleisen (10 to 12 per cent.), 68 for English No. 3 foundry at Ruhrort, 44 to 45 for Luxemburg puddling at Luxemburg.

Conditions in the Siegen District are apparently worse than elsewhere. A number of the furnaces there are considering the question whether they can keep their furnaces in blast, as they are not able to earn profits at existing prices. They are feeling more keenly than usual the competition of the furnaces further to the west, and stocks are accumulating to a serious extent. The one bright spot in the situation there is that American buyers recently ordered 10,000 tons of spiegeleisen, being the first American order for this

specialty since the financial panic of 1907. While this bright spot is of very small dimensions in itself, it gives room for the hope that it will prove the forerunner of larger subsequent orders; and from this standpoint too much has been made of it in the market. The furnaces in that region are trying to relieve their distress by inducing the Coal Syndicate to reduce the price of coke by 2 marks the ton. The Syndicate, however, voted to-day a reduction of only 1.50 marks.

The production of pig iron in June was 1,067,000 metric tons, comparing with 1,090,400 tons in May, and 956,400 tons in June, 1908. For the first half of the year the production reached 6,252,500 tons, being about 202,700 tons more than for the first half of 1908. As pointed out above, this gain in production does not correspond with the state of the market; it is also not improbable that the make of iron will be reduced during the current half year through the blowing out of furnaces.

Buffalo.

BUFFALO, N. Y., July 20, 1909.

Pig Iron.—The market continues to experience the effects of the midsummer lull as regards inquiry and new orders, although there have been considerable sales of malleable for prompt shipment. Such sales as were made, both in foundry grades and malleable, consisted of orders of small size. There is a decided undertone of strength in the market, however, with a tendency toward an advancing price schedule. Quotations for fourth quarter and more extended deliveries show a slight increase. The aggregate tonnage on contracts going forward from furnaces is heavy, although in some instances specifications have been held up for a few days. We quote as follows for current and fourth quarter deliveries, f.o.b. Buffalo:

No. 1 X foundry	$15.50 to $16.00
No. 2 X foundry	15.00 to 15.50
No. 2 plain	14.75 to 15.25
No. 3 foundry	14.50 to 15.00
Gray forge	14.25 to 14.75
Malleable Bessemer	15.00 to 15.50
Basic	15.75 to 16.00
Charcoal	19.50 to 20.00

Finished Iron and Steel.—The principal interest, which is still holding the price schedule on bars at 1.25c. and on plates and shapes at 1.35c., base, Pittsburgh, reports an unusually large number of orders entered the past week. Some of the independent interests, however, state that while there has been a fair degree of activity in inquiry and new orders, the week just closed has been quieter than any for some time preceding. Prices are being held firmly by these sellers at 1.30c., for bars and 1.40c. for plates and shapes, Pittsburgh. Jobbers are feeling the effects of the delayed mill deliveries, as orders for material out of stock are larger than they have been at any time since the recent depression. One of the leading independent interests was obliged to decline to submit a proposition on 1000 tons of bar material, owing to the large amount of tonnage on the mill books, and another interest was compelled to decline 3500 tons of plates and shapes for the same reason. Inquiries for railroad material are increasing and structural material continues active. Bids will be received this week for the American Radiator Company's office and laboratory building at the Pierce plant, Buffalo, requiring about 100 tons of steel, and bids will be closed July 26 for steel for the new Post Office Building at Hudson, N. Y. Specifications will soon be ready for the structural steel for the Lackawanna Bridge Company's shop to be erected at South Buffalo by the Worden-Allen interests of Milwaukee. The Cambria Steel Company has been awarded contract for 1000 steel hopper cars to be built for the Buffalo, Rochester & Pittsburgh Railroad.

Old Material.—The market remains dull, and has assumed a waiting attitude pending the expected brisk revival a little later on as a result of the demand that will be produced by the orders for railroad equipment recently placed with the mills and shops. Dealers are not inclined to let go of their holdings at prices which can be obtained at present, preferring to wait for the rise which they are confident will shortly occur. Prices are largely nominal, and are practically unchanged from last week. We quote dealers' asking prices to the trade, f.o.b. Buffalo, as follows:

Heavy melting steel scrap	$14.75 to $15.25
Low phosphorus steel scrap	18.50 to 19.00
No. 1 railroad wrought	15.50 to 16.00
No. 1 railroad and machinery cast scrap	14.75 to 15.00
Old steel axles	19.00 to 19.50
Old iron axles	21.25 to 21.75
Old car wheels	15.00 to 15.50
Railroad malleable	14.00 to 14.50
Boiler plate	12.75 to 13.25
Locomotive grate bars	12.00 to 12.25
Pipe	12.25 to 12.75
Wrought iron and soft steel turnings	9.00 to 9.50
Clean cast iron borings	7.50 to 8.00
No. 1 busheling scrap	13.00 to 13.50
No. 2 busheling scrap	11.00 to 11.50

The Lackawanna Storage Yards, Inc., has been formed at Buffalo, N. Y., for the purpose of storing and dealing in scrap metals, with a capital stock of $75,000. The incorporators are Eugene H. Jones and John Bennett of Buffalo and Ernest C. Hazard of Rochester.

Birmingham.

BIRMINGHAM, ALA., July 19, 1909.

Pig Iron.—With the views of producers unchanged as to prices and the melt gradually increasing, the market is considered strong, notwithstanding the limited buying. The engagements of the past week probably involved an aggregate of 5000 to 8000 tons in comparatively small lots for early delivery. It is not believed that in any recent engagements lower figures than $12.50, Birmingham, for No. 2 foundry, have been the price consideration, while for low grades a still higher basis is being maintained. In the absence of evidence to the contrary, the schedule of $13, Birmingham, is accepted as the market for deliveries during the last quarter. Recent additions to order book requirements for delivery further advanced than the third quarter, as indicated by reports, are immaterial, yet the fact remains that shipments to all lines of the trade have until recently commenced later than was anticipated at the time of purchase and the tonnage to be moved during the remainder of the year can only be conjectured. There has been no unusual effort on the part of producers who are temporarily out of the market for early shipments to increase their output, although all capacity is practically available for operation on short notice. It is noted that in some cases, where the demand for round tonnages for advanced delivery has taken definite form, there is some hesitancy in the consummation of negotiations, and developments resulting from more urgent requirements are awaited with interest. As far as can be ascertained, merchant interests have offered no inducements for trading by concessions in prices, and indications now favor a considerably smaller tonnage in the hands of such interests than has been accredited. The consensus of opinion among the best authorities favors the maintenance of prices now being asked and the adjustment of the output to the demand from time to time as conditions improve.

Cast Iron Pipe.—The business recently transacted in the South has consisted mainly of comparatively small lots of water pipe. Of late reports the principal considerations were lots of 1500 tons each, placed by the cities of Temple, Texas, and Newport, Ky. A contract for 1000 to 1500 tons of water pipe for the city of Moultrie, Ga., is to come up for letting on July 20, and several lots of smaller proportions are in sight for other Southern points. Prices are generally considered higher, and leading interests are in some cases out of the market, although in the absence of a criterion of values quotations are unchanged. We quote water pipe as follows, per net ton, f.o.b. cars here: 4 to 6 in., $25; 8 to 12 in., $24; over 12 in., average $23, with $1 per ton extra for gas pipe.

Old Material.—The inquiry since last report has resulted in few sales. Dealers are not disposed to induce buying by departures from the established asking prices and the trade apparently awaits further developments. The stock on dealers' yards is in some cases practically depleted, but there is some accumulation in the yards of idle mills which is the result of bargains offered some months since. We quote dealers' asking prices as follows, per gross ton, f.o.b. cars here:

Old iron rails	$14.00 to $14.50
Old iron axles	14.50 to 15.00
Old steel axles	12.00 to 12.50
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	10.00 to 10.50
No. 1 country wrought	9.50 to 10.00
No. 2 country wrought	9.00 to 9.50
No. 1 machinery	10.50 to 11.00
Tram car wheels	10.50 to 11.00
Standard car wheels	12.00 to 12.50
Stove plate and light cast	9.00 to 9.50
Cast borings	4.50 to 5.00
No. 1 steel	10.50 to 11.00

Refuse Steel Balls.—A great many of the steel balls made for bearings are discarded because of imperfections. Some are out-of-round, some unevenly hardened and some have flat spots or other surface defects. The best of these are assorted into one or more inferior grades for use in the cheaper bicycles, clothes wringers, carpet sweepers and the like. Many, however, are unfit for service as bearing balls, and such have become quite popular for polishing small metal objects. A typical mode of using them for this purpose is to employ a small tumbling barrel made for the purpose. The objects to be polished are placed in this barrel, together with a supply of balls and a quantity of a soap solution. According to the *Brass World* this solution is made of a special material. Some ammonia may be added, depending on the class of work. The barrel is then operated and, after a time, the objects become highly polished, the effect being almost equal to burnishing.

San Francisco.

SAN FRANCISCO, CAL., July 14, 1909.

Price cutting on rolled products by local jobbing interests is still the general rule, exceptionally low figures being named on merchant pipe, bars and sheets, which are in some cases being sold at practically cost. This is causing some dissatisfaction to the mill interests, as well as the merchants themselves, as it has a tendency to limit the volume of business. Sales in these lines are still comparatively large, though the movement is slightly smaller than a month ago. There is a fair outlook for sheets, and a number of large inquiries for bars have come up within the last fortnight, with a prospect of liberal orders during the present month. Financial conditions in this section are not yet entirely satisfactory. Local manufacturers and jobbers find difficulty in obtaining money for commercial purposes, though it is offered freely for building operations, and collections are extremely slow. The situation, nevertheless, presents ground for optimism regarding fall transactions, and more than a normal business is expected during the last quarter. Inquiries for structural material are coming out in better shape than last month, and a fair tonnage has been booked in the last two weeks. Several new water works projects are bringing inquiries for cast iron pipe, though recent orders have been rather light.

Rails.—The outlook for both heavy and light rails is more encouraging than for many months. The jobbing movement of 30 to 40 lb. rails continues large, and numerous inquiries are being received by the mill interests. Local transactions in heavy rails have been of moderate proportions so far, but are gradually increasing, and the numerous projects now under way will require a fairly heavy tonnage during the remainder of the year. The Inland Empire Railroad of Spokane, Wash., has ordered about 1800 tons, and the San Diego & Arizona Railway, which purchased 1500 tons last month, will be in the market for additional supplies. It is understood that an order for the Fresno-Hanford project will be placed shortly. Liberal orders are coming out for track fastenings and supplies, one fairly large purchase being made by Los Angeles railroad interests. The various rail projects in northern California are progressing slowly, and there is no immediate prospect of large orders from that quarter.

Structural Material.—The outlook in this line is becoming more encouraging. Bookings for San Francisco and other Pacific Coast points have been rather large for the last two weeks, while the Eastern fabricating interests are less anxious to take on contracts at the prices which formerly prevailed. Some local fabricators are still making rather low figures on small work which they are prepared to handle, but the larger shops have considerable work on old contracts and show more firmness in regard to prices. The total of building contracts for June shows a marked decrease, but the steel tonnage is about as large as for the preceding month, and several new inquiries have come up recently. Most of the local orders have been of only moderate size, but several of the larger projects are expected to be ready for letting during the late summer or fall. The largest contract for Coast work was for the bridge across the Willamette at Portland, Ore., which will be fabricated by the Pennsylvania Steel Company and erected by a local firm. The steel for the City and County Hospital was awarded to the Pacific Rolling Mill Company, on the assurance that at least 50 per cent. of the work would be fabricated here. This company has also booked about 200 tons for the Mission Savings Bank, and with these and numerous smaller contracts recently closed has work on hand requiring about 4000 tons. The Ralston Iron Works of this city has the contract for the Prager Building, amounting to about 1100 tons. The First National Bank at San Jose, Cal., about 380 tons, has gone to the American Bridge Company, which also has a fair tonnage for the Spreckels' Theatre Building on Market street. The Central Iron Works has taken several contracts amounting to a fair tonnage, including the B'Nai B'Rith Hall. Among the structures now being figured are the Joseph Frederick's Building at Post and Stockton streets, about 400 tons, and a large garage building for Charles Lee, 250 tons. The Pacific Union Club's Building, which will come up within a month or two, will require considerable structural steel work, and some material will also be required for the Concordia Club Building. The Washington Securities Company will soon start work on a ten story Class A building in Seattle, Wash.

Pig Iron.—There has so far been no general movement in the pig iron market, though buying is on a somewhat larger scale than during the spring. Foundry operations are increasing slowly, but with a number of municipal contracts in prospect a considerable reduction in the stocks on hand is expected during the remainder of the summer. The consumption by foundries working on architectural and machinery castings is steady, with no pronounced increase, but a further expansion of operations on machinery work is looked for later in the year. A large portion of the demand, however, is filled by former contracts, and current purchases are generally small. Foreign iron is still low, ordinary grades being offered freely at $21.50 to $22.50, though there are occasional sales of some brands as high as $24. With foreign material cheap and plentiful, there is little demand for domestic iron. Two shipments have arrived recently, amounting to over 1000 tons.

Cast Iron Pipe.—New orders for cast iron pipe remain comparatively light, though a number of projects of moderate importance are now coming into the market, and a fair tonnage is in prospect for the next month or two. The town of San Bernardino, Cal., has ordered 300 tons from the United States Pipe Company, and will probably place additional orders in the near future. An emergency order of 90 tons was diverted to this town from Los Angeles, owing to the breaking down of the old steel water system. Small orders have been placed by the towns of Medford, Ore., and San Diego, Cal. Some orders are coming in from several water and gas companies, but the buying by these interests is rather light at present. The city of Portland, Ore., has provided for a number of new mains, and Hood River, Ore., will hold a bond election for extension of its water system on July 28. Victoria, B. C., has called for bids on a lot of cast iron pipe, gate valves and supplies. A large tonnage of pipe for San Francisco has arrived and is being stored, as the construction of the system has not been started. The contract for 2700 gate valves has been awarded to the Pelton Water Wheel Company of this city, at a price exceeding that of the Pittsburgh Valve, Foundry & Construction Company by over $50,000, and the latter company threatens suit.

Merchant Pipe.—No heavy orders have been placed by the oil interests since the sale for the long pipe line of the Union Oil Company last month, and the general demand from that quarter has declined to some extent in the last few weeks. A large order for a water system in the oil fields has been pending, but appears to have fallen through for the time being. The policy of jobbers in cutting prices is criticised in some quarters as tending to limit the movement, as none of the dealers are anxious to take large orders at the prices named. Comparatively small lots are being sold from local stocks at little or nothing above the cost from the mills.

Old Material.—The largest lot of cast iron scrap now on the market is architectural material from the old City Hall. The material is rather light, but of good quality, and a considerable quantity has been sold at about $15 per ton, at which price the foundries are willing to purchase freely. Some local interests are still holding good stocks of cast scrap at $17 to $18, but there are few sales at these prices. Melting structural and old rail scrap is fairly firm at $9, and old wrought iron and soft steel is selling at $9 to $11.

The Southern Pacific has practically decided to equip its new electric suburban system with steel cars. Most of the motors and fittings are already on hand, but the car bodies have not been ordered. The Southern Pacific has announced plans for a steel bridge over the Sacramento River, to cost about $1,000,000.

P. C. Jurs has been appointed manager of the mining machinery department of the Union Iron Works Company.

The Judson Mfg. Company's plant at Emeryville, Cal., has been closed for the last week pending the settlement of differences between the management and the officials of the Iron, Steel and Tinworkers' Union.

A number of local firms are to bid on the contract for repairs to the Government dredge Chinook. The total contract will amount to about $125,000, of which $80,000 is for repairs to the boilers.

The Pacific Steel & Wire Company has called a meeting of stockholders for September 2, to consider diminishing the capital stock.

The Bethlehem Steel Company has taken the contract for armor plate vaults for the Union Trust Company's new building, amounting to $115,000.

The Union Iron Works has a large contract for a 30-stamp mill for the Tonopah Extension Mining Company.

J. B. Becker, formerly with Baker & Hamilton, has opened offices in the Sheldon Building, San Francisco, representing a line of boilers, engines and machinery.

The Pacific Jupiter Steel Company, of this city, has moved its offices from the Shawmut Building to the Postal Telegraph Building.

The Western Steel Dam Company has been incorporated in Los Angeles, with a capital stock of $2,000,000, by C. Johnson, A. H. Weber, R. D. Morris, D. P. Hatch and W. E. Lloyd.

The repair shops and roundhouse of the Tonopah & Goldfield Railroad, at Tonopah, Nev., were destroyed by fire June 28, several large mountain locomotives being lost. The loss is estimated at $500,000, partially covered by insurance.

The Natomas Consolidated Mining Company has completed plans for large machine shops at Thermalito, Cal.

The Cawley Foundry Company, Tacoma, Wash., is preparing to build a drydock, the estimated cost of which is $250,000.

Metal Market.

NEW YORK, July 21, 1909.

Copper.—Vague and exaggerated reports in the daily papers of large sales of electrolytic copper by anonymous sellers to anonymous buyers during the past week served to awaken the copper trade from the lassitude it has been experiencing. While the reports gave those interested in the market something to discuss, it is generally conceded that most of them were inspired by speculative interests or emanated from a keen imagination. The market has adopted a more cheerful tone, but we have only been able to establish the fact that there is a fair volume of small trading going on at prices we have been quoting for the last two weeks. There is some call for September delivery, and a few transactions have been made, but there is nothing like a big buying movement, and these reports have simply tended to advance the Metal Exchange quotations nearer to the figures which have been named by conservative buyers and sellers as the market prices. While sales of electrolytic have been reported at above 13c., it is generally offered at that figure, with some slight advances in quotations for September delivery in answer to the few offers that are being made. Lake is usually quoted at 13.50c. It seems to be generally conceded by members of the Metal Exchange that the board will adopt the recommendations of the committee appointed to reorganize its affairs to the effect that the exchange shall deal in standard copper similar to the methods employed in the London market, and that action will be taken, no doubt, before the month is out. The London market has advanced to a slight extent and more trading is being done. It is probable that the improved conditions there have inspired the optimistic reports that have been current here. In London to-day the following prices were established: Spot, £58 15s.; futures, £59 8s. 9d. The market was easy. The sales were: Spot, 400 tons; futures, 900 tons.

Pig Tin.—A little more interest seems to be taken in futures in the tin market and a more cheerful tone prevails among the selling interests as a result of a number of good inquiries that have come before the trade. This does not mean that a buying movement is on, however, but there is enough business on hand to take away the vacation aspect the market has worn of late. It is admitted that there has been more of a curtailment in production of tin plate as a result of the strike at the mills than was expected. There was a fair volume of business during the week and prices are stronger, but they are not considered very profitable to the sellers as yet. Prices established during the week were as follows:

	Cents.
July 14	29.05
July 15	28.95
July 16	28.95
July 19	29.15
July 20	29.00

The approaching Banca sale on July 29, it is conceded, will have some effect on the domestic market, as it will indicate to some extent the probable demand for tin abroad. The London market is firm and quotations there to-day were as follows: Spot tin, £132 2s 6d; futures, £133 12s 6d. There was some brisk trading in tin in New York early this afternoon and sales were made as high as 29.15c.

Lead.—The market continues easy, the resales having been somewhat larger than the leading interests expected. It is evident that some large consumers have not much faith in the future of the lead market and are willing to turn their holdings, bought some time ago, into a profit. The profits thus taken, even at the reduced prices now prevailing, have in some cases been worth while. It is rather hard to state accurately just what the market price for lead might be at present, as it is known that some carloads of outside lots have been sold at 4.30c., although the leading producer and outside interests continue to quote it at 4.35c., and they refuse to sell at less than that. It is entirely a resale market and the same condition exists in St. Louis, where sales have been reported as low as 4.17½c. We quote the New York price at nominally 4.35c.

Spelter.—The market is featureless, and there is not enough demand to induce sellers to offer any better terms than the conceded prevailing price, as most of the inquiries are for small quantities. The usual quotation is 5.35c.

Old Metals.—The following dealers' selling prices represent the New York market:

	Cents.
Copper, heavy cut and crucible	12.50 to 12.75
Copper, heavy and wire	12.25 to 12.50
Copper, light and bottoms	11.25 to 11.50
Brass, heavy	9.00 to 9.25
Brass, light	7.00 to 7.25
Heavy machine composition	11.25 to 11.50
Clean brass turnings	8.00 to 8.25
Composition turnings	9.50 to 9.75
Lead, heavy	4.10 to 4.15
Lead, tea	3.75 to 3.80
Zinc scrap	3.75 to 3.87½

Antimony.—There is little demand for antimony, and while Cookson's is scarce it may be had in some quarters at less than 8.50c., but that is the ruling price. Hallett's can be obtained for 7.50c.

Tin Plate.—Notwithstanding the strike in some of the mills of the leading interest, stocks of tin plate were so large when this occurred that there is still plenty to meet current demands. We quote 100-lb. IC coke plates at $3.64.

Iron and Industrial Stocks.

NEW YORK, July 21, 1909.

The stock market for the greater part of the past week has been under the leadership of the steel stocks, particularly United States Steel. The prices of both the common and preferred stocks are now far above their previous high records. The common stock has reached a price more than 20 points higher than was reached by it when it was earning 16 per cent. and paying 4 per cent. Commenting on this fact, a leading brokerage house on Wall Street says: "The movement is attributed partly to the anticipation of still greater earnings in the future, and partly to very expert operations in the market." The range of prices on active iron and industrial stocks from Thursday of last week to Tuesday of this week was as follows:

Allis-Chalm., com.	14⅞- 15¼	Railway Spr., pref.	104⅛-105¼
Allis-Chalm., pref.	51 - 52	Republic, com.	32 - 33½
Beth. Steel, com.	30 - 31½	Republic, pref.	104½-108
Beth. Steel, pref.	60 - 62	Sloss, com.	83 - 85
Can, com.	11 - 12	Pipe, com.	31 - 31¼
Can, pref.	80¼- 82½	Pipe, pref.	81 - 82
Car & Fdry, com.	57½- 63⅜	U. S. Steel, com.	69⅜- 73
Car & Fdry, pref.	117⅛-118¼	U. S. Steel, pref.	125½-128⅞
Steel Foundries	51¼- 55¼	Westinghouse Elec.	84 - 86¼
Colorado Fuel	44 - 45½	Chi. Pneu. Tool	23½- 24
General Electric	164 -168⅞	Am. Ship, com.	58⅛- 59
Gr. N. ore cert.	75⅞- 76¾	Am. Ship, pref.	109½
Int. Harv., com.	86 - 86½	Cambria Steel	43 - 43⅞
Int. Harv., pref.	122 -122½	Lake Sup. Corp.	22½- 24½
Locomotive, com.	59 - 63¼	Penna. Steel, com.	08
Locomotive, pref.	119 -120⅝	Penna. Steel, pref.	116 -117
Nat. En. & St., com.	15½- 16¾	Warwick	9
Pressed St., com.	43 - 45⅝	Crucible Steel, com.	9⅝- 12¼
Pressed St., pref.	106 -106½	Crucible Steel, pref.	75 - 79½
Railway Spr., com.	44½- 47	Harb.-W. Ref., pref.	86 - 87

Last quotations on active stocks up to 1.30 p.m. to-day were as follows: United States Steel common 71, preferred 126½, bonds 106; Car & Foundry bottom 62⅝, preferred 118½; Locomotive common 62⅝, preferred 121¾; Steel Foundries common 54¾; Colorado Fuel 44½; Pressed Steel common 46⅛, preferred 107; Railway Spring common 46⅞; Republic common 33¼, preferred 107⅛; Sloss-Sheffield common 83⅝; Cast Iron Pipe common 31¼, preferred 82½; Can common 12⅛, preferred 83½.

Iron and Steel Bonds.

Chisholm & Chapman, 18 Wall Street, New York, report the following quotations:

	Bid.	Asked.
Bethlehem Steel 1st ext. 5s, due January, 1926	89	89½
Bethlehem Steel purchase money 6s, August, 1998	117	118½
Buffalo Iron 5s, October, 1925	95	100
Buffalo & Susquehanna Iron 1st 5s, June, 1932	99¾	..
Buffalo & Susquehanna Iron deb. 5s, January, 1926	94	98
Dominion Iron & Steel 5s, July, 1929	93½	..
La Belle Iron Works 1st 6s, December, 1923	103½	105
Lackawanna Steel 1st 5s, April, 1923	..	98
Maryland Steel 1st 5s, February, 1922	102	..
Penn Steel 1st 5s, November, 1917	102	103
Pennsylvania & Maryland Steel 6s, September, 1925	..	110½
Republic Iron & Steel 1st 5s, October, 1934	101¼	101¾
Sloss Iron & Steel 1st 6s, February, 1920	107	108½
Sloss Iron & Steel consol. 4½s, April, 1918	94½	97
Jones & Laughlin 1st 5s, May, 1929	100¾	101
United States Steel Corporation.		
Collateral Trust 5s, Series A, C, E, April, 1951	114¾	115½
Collateral Trust 5s, Series B, D, F, April, 1951	114¾	115¼
Sinking Fund 5s, April, 1963	105¾	106
Union Steel 1st 5s, December, 1952	105½	106
Clairton Steel 5s, 1908-1913	101	..
St. Clair Furnace 1st 5s, 1910-1939	101	..
St. Clair Steel 1st 5s, 1908-1926	101	..
Illinois Steel deb. 5s, January, 1910	..	..
Illinois Steel 5s, April, 1913	..	101

All bonds quoted "and interest."

The Buffalo & Susquehanna Iron Company.—Fisk & Robinson, bankers, New York, are offering, at 97½ and interest, $250,000 Buffalo & Susquehanna Iron Company 20 year 5 per cent. debenture gold bonds, due 1926, being the unsold portion of $1,500,000 purchased by them. The bonded debt consisted originally of $3,000,000 first mortgage 5 per cent. bonds and $1,500,000 debenture 5 per cent. bonds. Of the former $300,000 have been paid off by the operation of a sinking fund, which provides for the retiring of $100,000 on June 1 of each year. The capital stock is $1,000,000. Full operation of the plant commenced in July, 1905, and from that time to March 1, 1909, the net earnings averaged over $50,000 per month and the surplus earnings are at March 1, 1909, amounted to more than $1,000,000. The company owns two modern blast furnaces at Buffalo and a leasehold in iron mines in the Mesaba Range, near Hibbing. The company's explorations in Michigan, which have been carried on by the Munro Iron Mining Company, a subsidiary corporation, have been rewarded by the find of a large deposit of excellent foundry or basic ore in the Iron River District, where the company had taken options and had purchased the adjoining Hiawatha mine leasehold. It owns also, by similar leasehold, a tract of 80 acres of land at Iron

Mountain, Mich., estimated to contain about 10,000,000 tons of siliceous ore desirable for mixture with these other ores. By these properties the company is rendered absolutely independent in the matter of ore supply. It further controls 2900 acres of coal land situated at Tyler and Sykesville in western Pennsylvania estimated to be underlaid with 22,000,000 tons of good coking coal. Through the Cascade Coal & Coke Company, a subsidiary corporation, the company mines its own coal and manufactures its own coke, some 300,000 tons of which are required annually. The coal mines and coke ovens operated under its control are producing all the coal and coke needed for the requirements of the company.

Dividends.—The J. G. Brill Company has declared a quarterly dividend of 1¾ per cent. on the preferred stock, payable August 2.

New York.

NEW YORK, July 21, 1909.

Pig Iron.—Interest has centered chiefly in the buying of basic pig by the open hearth steel works of eastern Pennsylvania, four of which, together, took 44,000 tons, which, however, probably does not cover all the transactions closed. It is believed probable that the leading steel interest will soon enter the Eastern market for iron for a plant in the Philadelphia District. The market has advanced under this buying movement, on top of which come inquiries for basic iron for delivery during the first quarter of 1910. There have been some good purchases of foundry iron in this district and in New England, and one lot of 5000 tons was placed in the Buffalo market with pipe founders. The market is firmer with No. 1 Northern foundry at $17 to $17.25, No. 2 foundry at $16.50 to $16.75 and No. 2 plain at $15.75 to $16. Alabama iron is quoted $17 to $17.50 for No. 1 foundry, and $16.75 to $17 for No. 2 foundry. The question has arisen whether we are approaching the importing point, provided the new duty be $2.50 per ton. The consensus of opinion is that No. 2 foundry iron would have to advance to a basis of $18, at New England points, before any importations of magnitude could be expected.

Steel Rails.—The only sale of magnitude during the week is a lot of 10,000 tons by the Pennsylvania Steel Company to the Boston & Maine road. This consists of 7500 tons of 75-lb. rails and 2500 tons of 80-lb. rails. It is expected that the same buyer will place 10,000 tons more, negotiations now being on with two other mills. Some orders for girder rails have been placed and some additional lots are in sight.

Structural Steel.—Aside from a fair run of moderate sized contracts, no work of consequence has been placed during the week. The majority of the mills have been asking higher prices for plain structural material. The Steel Corporation has not yet announced an advance, but is expected to do so at an early date.

Ferroalloys.—Some sales of ferromanganese have been reported at $42. Ferrosilicon is in stronger demand, with a slight advance in quotations in some quarters. The asking price is $62.50.

Bars.—Again have the Eastern bar iron manufacturers quite generally withdrawn outstanding quotations, and are naming 1.50c., tidewater, for ordinary merchant bars and 1.55c. for iron made to specifications for railroads and other consumers requiring a good quality. The demand has of late improved considerably for both bar iron and steel bars. Regular quotations on steel bars are now 1.46c., tidewater.

Wrought Iron Pipe.—The demand for wrought iron pipe is very heavy. Most of the Eastern manufacturers have followed the example of the Western mills, having made an advance last week of $2 per net ton. This is the second advance within a month. On June 19 an advance was made of $2, so that the price is now up $4 per ton over the early June figures.

Cast Iron Pipe.—The special feature of the current market is the strong demand for flange pipe. As this kind of pipe is used very largely in factories and in other installations requiring pipe to resist high pressure, the increased demand for it is accepted as indicating much greater activity in putting old works in shape for operation and in making extensions and enlargements to manufacturing plants. The demand for ordinary pipe, however, is not active, and competition is sharp for even the small orders which are now coming out. It is stated that on orders for only 100 to 300 tons, some of the foundries are naming as low prices as ordinarily they would be expected to make on contracts for 5000 tons. Carload lots of 6 in. are available at $23 to $23.50, tidewater.

Old Material.—The market has taken on a better aspect. Considering the fact that this is the hight of midsummer, it may really be called fairly active. Some blocks of steel scrap have been sold, the aggregate running close to 15,000 tons, on which full prices have been realized. The demand, it must be admitted, is, however, somewhat irregular, as quite a number of the Eastern steel manufacturers are out of the market either because shipments to them have been embargoed or for other reasons, and consequently not all the dealers are participating in the demand which some are experiencing. Quite a number of good inquiries are in hand for steel scrap, for cast scrap for foundry purposes and for wrought pipe, these lines being probably the most active on the list of old material. A fairly good movement is reported in relaying rails and old car wheels. It is quite generally expected that prices of all kinds of old material will be higher by the middle of August, in view of the very heavy demand for pig iron and the fact that the rolling mills and steel works are steadily getting up to their full productive capacity. Quotations are as follows, per gross ton, for delivery in New York and vicinity:

Old girder and T-rails for melting	$12.25 to $12.75
Heavy melting steel scrap	12.00 to 12.50
Relaying rails	21.00 to 21.50
Standard hammered iron car axles	19.50 to 20.00
Old steel car axles	17.50 to 18.00
No. 1 railroad wrought	14.50 to 15.00
Iron track scrap	13.00 to 14.00
No. 1 yard wrought, long	13.50 to 14.00
No. 1 yard wrought, short	12.50 to 13.00
Light iron	8.00 to 8.50
Cast borings	8.25 to 8.75
Wrought turnings	9.50 to 10.00
Wrought pipe	12.00 to 12.50
Old car wheels	14.50 to 15.00
No. 1 heavy cast, broken up	13.50 to 14.00
Stove plate	11.50 to 12.00
Locomotive grate bars	11.00 to 11.50
Malleable cast	14.25 to 14.75

The Pittsburgh Gage & Supply Company, Pittsburgh, Pa., has recently received contracts for high pressure steam pipe installations as follows: Lingohocken Coal Company, Chattasoy, W. Va.; Crucible Steel Company of America, Pittsburgh; Princeton Power Company, Princeton, W. Va.; Massillon State Hospital, Massillon, Ohio; Troll Coal Mining Company, St. Clairsville, Ohio; Eclipse Laundry Company, Pittsburgh. The company has also received orders for installing White Star oiling systems for the following companies: Goldie & McCullough Company, Galt, Ontario, Canada; United Ice & Coal Company, Harrisburg, Pa.; Frick Company, Waynesburg, Pa.; American Sugar Refining Company, Chalmette, La.; Phillips Sheet & Tin Plate Company, Clarksburg, W. Va., and San Antonio Gas & Electric Company, San Antonio, Texas.

The first national conservation congress of the United States will be held in the auditorium of the Alaska-Yukon-Pacific Exposition, Seattle, Wash., August 26, 27 and 28. Arrangements for the congress are being perfected by the Washington Conservation Association, an organization comprising several hundred prominent men of the State. It promises to be the largest and most representative gathering of active conservationists since the recent conference of Governors at the White House, Washington. The discussions will include the subjects of irrigation, dry farming, forestry, mining, transportation, good roads, pure food, public morals and health and the relation of capital to labor in the work of modern conservation.

The New York Leather Belting Company, 51 Beekman street, New York, issues a monthly publication known as *The Phœnix*, which takes up technical discussions, with illustrated descriptions of transmission problems. It shows comparative tests of the efficiency of various types of belting for different classes of machinery. A series of articles has recently been presented in behalf of dealers in mill supplies, showing the unfair treatment which supply houses are getting in many lines in the matter of resale price, and also showing the economical advantage of manufacturers selling exclusively through dealers.

The Jones & Laughlin Steel Company, Pittsburgh, is steadily making contracts for the equipment for its new tin plate plant to be erected at Aliquippa, Pa. It has placed an order with the C. & G. Cooper Company, Mt. Vernon, Ohio, for a 34 and 60 x 60-in. twin tandem Corliss engine, which will drive 5 hot mills. It will be slow running and will develop about 2500 hp. The Jones & Laughlin Company has also placed an order with the Cooper Company for an engine to drive the Morgan continuous billet mill at its South Side Works, Pittsburgh.

OBITUARY.

FRED E. GROUT, Orange, Mass., recently with the Grout Bros. Company, manufacturer of automobiles, is dead at Albuquerque, N. M., aged 40 years, after a long illness.

FREDERICK NOELKE, one of the pioneer iron manufacturers of Indianapolis, Ind., died July 17, at his home in that city. He was born at Melsungen, Germany, in 1846, and came to America in 1866. His first work was with B. F. Haugh & Co., architectural iron workers, Indianapolis. In 1875 he founded the firm of Noelke & Co., afterward the Noelke-Smallwood Company. In 1896 he organized the Haugh-Noelke Iron Works, retiring in 1907, the firm then becoming the Noelke-Richards Iron Works.

LEFFERT LEFFERTS BUCK, the eminent bridge engineer, died suddenly from apoplexy July 17 at Hastings, N. Y., aged 72 years. He was born at Canton, N. Y., and after training as a mechanic, he was graduated from St. Lawrence University in 1863. He enlisted in the Sixtieth Regiment, N. Y. S. V., as a private, and fought through the Civil War, attaining the rank of captain. After the war he entered the Rensselaer Polytechnic Institute at Troy, N. Y., graduating in 1868. He rapidly rose to prominence as a civil engineer. He built tunnels and bridges in Peru, bridges over the Niagara River, the Columbia River Bridge for the Northern Pacific Railroad, the Union Pacific Station at Omaha and other noteworthy structures. His last important service was as chief engineer of the Williamsburg Bridge over the East River between New York and Brooklyn. He was a member of the Loyal Legion, the Engineers' and Century clubs, the American Society of Civil Engineers, the Military Institute and the Burns Society.

WILLIAM B. DENNIS, died at his residence at Kirkwood, Mo., July 13, aged 82 years. He was for many years associated with De Camp Bros. & Yule. Having been identified with the iron business over 40 years, handling pig iron on commission, he was probably the oldest member of the St. Louis trade. He was widely known and highly respected. The esteem in which he was held was manifested by the affectionate attention given him by many persons during his last illness.

ROBERT CLARK, a pioneer resident of Chicago, died in that city July 11 after an illness of several months. He was born in Aboroth, Scotland, in 1829, and went to Chicago in 1849. Until his retirement 15 years ago he was engaged in the iron manufacturing business, being at the head of the old Ætna Iron Company. He took an interest in public affairs, having filled a number of local offices.

N. PAUL FENNER, JR., who recently resigned as president and general manager of the American Valve & Meter Company, Cincinnati, died July 19, aged 47 years. He leaves a widow, one son and two daughters.

The Erie Engineers' Handbook.

Novel in the way of a trade publication is that recently published by the Erie Engine Works, Erie, Pa., in the form of an engineers' handbook. It is a compilation for handy reference of useful information, having to do particularly with steam power and power transmission. As illustrations there are views of engines, boilers and heaters made by the company, shown complete, and in some cases details of parts unassembled and also in section. As examples of the contents there are directions for determining the correct setting of engine valves, directions for calculating diagrams of steam engines, loss of heat from uncovered steam pipes, how to calculate speeds, how to center an engine, how to find the horsepower of a steam engine, &c. There are also paragraphs dealing with electrical machinery, such as the dynamo, transformers, &c. Various tables give such information as the circumference and area of circles, weights of various materials and their melting points, power that can be transmitted by single and double belting, chimneys and grate areas for high pressure boilers, &c. All in all, the book should prove of considerable value to the steam engineer.

Trade Publications.

Railroad and Contractors' Supplies.—The Walter A. Zelnicker Supply Company, St. Louis, Mo. Weekly bulletin No. 88, covering a large quantity and variety of railroad and contractors' supplies and machinery in stock for immediate delivery, including band mill complete, locomotives, cranes, concrete machines, planing mill machinery, steam shovels, hoisting and traction engines, &c.

Expanded Metal Lath.—The Consolidated Expanded Metal Companies, Keenan Building, Pittsburgh, Pa. Two bulletins. Series AI shows metal lath in a number of designs and treats of its use in fireproof construction. Series BII explains the use of expanded metal in steel concrete construction and gives useful data.

Second-Hand Machinery.—McGovern, Archer & Co., 114-118 Liberty street, New York. This is a catalogue of second-hand equipment, and covers a general line of electrical and steam machinery, railroad cars, air compressors, &c.

Fuel Economizers.—Green Fuel Economizer Company, Matteawan, N. Y. Booklet entitled "How to Save Coal." The problem is described from the point of view of recovering waste heat in the chimney flue gases. The book briefly describes the construction of the Green economizer and gives several illustrations of large plants which have recently been equipped with Green economizers and Green mechanical draft fans.

Special Castings.—The Veeder Mfg. Company, Hartford, Conn. Catalogue No. 15. Describes Veeder castings, which are made from an alloy the strength of which, it is claimed, is about equal to aluminum or cast iron. The metal does not oxidize when exposed to the air, is not affected by moisture and is said to have good wearing qualities. A number of small castings are shown.

Polishing Wheels.—Divine Brothers, Utica, N. Y. Two booklets. One shows several types of a compressed polishing wheel which is constructed with a cushion between the rigid arbor of the polishing frame and the work being polished. This cushion allows the wheel to work with a steady cut and obviates vibration. The other booklet treats of the use of glue for polishing purposes and recommends a special glue made by the company.

Gas and Gasoline Engines.—Lambert Gas & Gasoline Engine Company, Anderson, Ind. Catalogue, 6 x 9 in., 16 pages. A standard gas and gasoline engine made by the company is described with the aid of illustrations and some special equipment in the way of portable gasoline engines is shown. An Ohio River boat equipped with a Lambert engine is pictured and the power arrangement is briefly described. Engines are made in standard sizes up to 35 hp.

Electric Motor Control and Lifting Magnets.—Electric Controller & Mfg. Company, Cleveland, Ohio. Booklet and folder. The booklet is entitled "Electric Motor Control," and is one of a series of articles written by A. C. Eastwood, president of the Electric Controller & Mfg. Company. It treats of the company's method of motor control and is illustrated in an interesting manner. The folder refers to lifting magnets and shows a number of large magnets in operation.

Regulating Devices.—Mason Regulator Company, Boston, Mass. General catalogue No. 58, 6 x 9 in., 178 pages. Covers a general line of regulating devices, including air pump governors, valves, blowing engine governors for delicate air pressure, boiler controllers, &c. Space is also given to the Mason steam pump. The volume is well illustrated and thoroughly indexed.

Office Equipment.—General Fireproofing Company, Youngstown, Ohio. Pamphlet devoted to metal furniture, such as filing cabinets, card index cases, &c.

Lever Jacks.—Joyce Cridland Company, Dayton, Ohio. Bulletin No. 35. One of a series of publications being issued by this company in booklet form. It gives a description of various jacks of the lever type and also describes in detail the mechanism and the workings of the full automatic jack in an interesting manner. Some recent improvements in the automatic geared jacks are also taken up. These jacks, it is claimed, have the power and fine adjustment afforded by hydraulic jacks.

Milling Machines.—The Ingersoll Milling Machine Company, Rockford, Ill. Publication No. 16 C. Shows a combined knee type milling machine which was described in *The Iron Age* May 6, 1909. Brief specifications of the machine are given.

High Grade Steel.—Colonial Steel Company, Pittsburgh, Pa. Catalogue of crucible and high grade open hearth steel. Pocket size; 33 pages. Attractively gotten up. Not only enumerates the various specialties manufactured by the company, but also gives directions for forging, hardening and grinding the several grades of steel made. Further presents classification tables of merchant steels, together with tables of weights and other information of value to steel users.

Flaming Arc Lamps.—Charles L. Kiewert Company, Milwaukee, Wis. Two bulletins. One treats of the Aurola flaming arc lamp for direct current and shows buildings in which it is used. The other describes the Alba flaming arc lamp, which is adaptable for broad distribution of light.

The Machinery Trade.

NEW YORK, July 21, 1909.

The buying movement, mentioned in this market last week as likely to start shortly, has begun, and since our last report machinery houses have received some of the most extensive orders placed for some time. Not only has the largest list before the trade been practically closed, but several other smaller inquiries have been covered, making quite a fair volume of business. Aside from the large list some good orders were received from automobile builders and indications are that considerable business can be looked for from that source in the near future. The impetus given trade by the distribution of orders by the American Locomotive Company is very gratifying, and sellers of machinery are more confident of a continued expansion of the demand, especially as it is now practically certain that the Delaware, Lackawanna & Western Railroad will buy against the large list issued some months ago within the next few days, thus augmenting to a considerable extent the large business just closed. Several important interests are in the market for small lots of tools, but no further inquiries or orders of importance are reported. The railroads have come into the market for a few tools only.

Fiat Automobile Company's Machinery List.

Many machinery houses in the trade are bidding on the large list of requirements sent out by the Fiat Automobile Company, 1786 Broadway, New York, which is having plans prepared for an extensive plant to be located at Poughkeepsie, N. Y. Although the list sent out by Mr. Cole, who is in charge of the buying details for the Fiat Company, is an extensive one, it is understood that this does not represent the total requirements of the company, according to the plans it is preparing, and it is merely taken as an indication of what will be needed in the way of machine tools and special machinery equipment. As soon as the company gets all of its figures in, a supplementary list will be issued completing the machinery requirements. The list now before the trade is in part as follows:

Two wet tool grinders, 1 low swing lathe, 2 milling machines, 3 turret lathes, 11 lathes, 1 20-in. lathe, 1 30-in. boring mill, 1 24-spindle drill, 1 4-spindle drill, 2 6-spindle drills, 1 key profiler, 1 threader, 1 18-in. shaper, 1 gear shaper, 1 keyseater, 1 medium punch press, 1 universal grinder, 4 gear cutters, 2 toolroom grinders, 1 grinder with universal head, 1 polishing and burring machine, 4 millers, 2 gear hobbing machines, 1 gear tester, 1 piston ring grinder, 1 cylinder grinder, 1 screw straightening press, 1 10 to 25 ton hydraulic press, 2 boring mills, 1 24-in. drill press, 3 2-in. automatic screw machines, 2 4-in. automatic screw machines, 3 1½-in. automatic screw machines, 1 beveled gear cutter, 1 tapper, 1 centering machine, 6 13-in. sensitive drills, 6 14-in. engine lathes, 1 24-in. engine lathe, 1 16-in. key lathe, 1 18-in. engine lathe, 6 hand millers, 1 crank shaft lathe, 8 piston lathes, 1 heavy drill, 2 4-spindle drills, 1 4-spindle 20-in. drill, 2 14-in. drills, 4 18-in. drills, 6 20-in. and larger drills, 1 magnetic washer grinder, 1 crank shaft grinder, 4 plain grinders, 2 cylinder boring machines, 1 screw slotter, 2 milling machines, 2 small lathes, 1 universal trimmer, 11 plain millers, 3 10-in. drills, 1 11-in. drill, 1 centering machine, 2 power hack saws, 8 14-in. lathes, 2 shapers, 1 planer, 2 grinders, 2 cutter grinders, 1 universal internal grinder, 1 external grinder, 3 medium arbor presses, 3 sensitive drills, 1 band saw, 1 rip saw, 2 planers, 1 shaper, 1 turning lathe, 1 sand drum, 1 swing cut-off saw, 1 square mortising machine, 1 500-lb. hammer, 2 blacksmith forges, 1 forge blower, 4 furnaces, 1 power roll, 1 wire straightener, 1 bending roll, 1 power shear, 1 metal saw, 1 power riveter, 12 grinder stands, 1 exhaust blower, 4 polishing stands.

Orders were placed last week by the York Motor Company, York, Pa., for the additional machinery required for its shops.

Large Purchases by American Locomotive Company.

Purchases were made the past week by the American Locomotive Company, New York, against the extensive list of machine tools it issued about two weeks ago, and the total of the orders placed was probably larger than that of any purchases made by one concern for some time. It is understood that about $200,000 worth of machine tools were purchased, the business being divided among a number of houses, no one securing a major portion. While this large amount of machinery was purchased, it is understood that the company has not yet completed its buying and that there are a number of machines which will be purchased shortly. This machinery has been bought to augment the equipment of the various shops to increase the efficiency and a portion of it will likely be installed at Dunkirk, where important improvements have lately been made.

It is now practically certain that the Delaware, Lackawanna & Western Railroad will, within the next few days, make purchases against the machine tool list it issued in the early part of the year. This list covers a large number of different machines aggregating in value over $150,000, which are to be installed in the new shops at Scranton, Pa. It is understood that the machines have all been decided upon and that it is now merely a question of sending out the signed orders. It will be remembered that in addition to this large amount of machinery the road last month issued specifications for 12 electric traveling cranes for the Scranton shops, including one 120-ton, two 20-ton, one 30-ton, two 15-ton, one 10-ton and four 1500-lb. cranes. In addition to the equipment on these two lists machinery will likely be required for the new car repair shop, 84 x 481 ft., it is to erect at East Buffalo, N. Y., bids for the construction of which were received the latter part of June.

The Southern Iron & Steel Company is preparing to spend about $1,000,000 in improvements at its Ensley, Ala., plant. The directors of the company authorized the expenditure after looking over preliminary plans showing the projected improvements and additions. These plans are not as yet in shape to announce publicly just what the extensions will be, but it is stated that the wire rod mill will be remodeled at a cost of $250,000 and all of the other plants owned by the company will be repaired and brought up to date. The improvement will be a general one and will bring some business to about every branch of the machinery trade.

The Covert Motor Vehicle Company, manufacturer of automobile gears and gear cutting, Lockport, N. Y., has awarded contracts for the construction of a new plant to be erected at Grand street, near the Erie Canal locks, to John Moore of Lockport. The main building is to be three stories, 50 x 230 ft., with an additional building 24 x 100 ft. Announcement covering lists of machinery to be required for the above plant was recently made in *The Iron Age*.

The American Laundry Machinery Company has completed plans for the new plant which it is to build on Buffalo road, opposite Kossuth street, Rochester, N. Y. The buildings will be of brick, structural steel and reinforced concrete, one and two stories in hight, and cost about $200,000. A large amount of new machinery will be installed.

The De Soto Foundry & Machine Company, Mansfield, La., invites proposals for the erection and installation of a complete steel foundry using the Tropenas process. It is the intention to erect a building about 60 x 120 ft. All communications should be addressed to F. Kavanaugh, manager.

Meikleham & Dinsmore, 25 Broad street, New York, are looking into the question of constructing a large dam on the Big Bushkill River, near Stroudsburg, Pa., in connection with a hydro-electric plant, to furnish power in that vicinity. The company has acquired the necessary property, but it is stated that nothing in the way of construction work will be done until fall at least. The same company is interested in a project to build a dam across the Susquehanna River at Towanda, Pa., to develop about 1500 hp. in a hydro-electric plant, but as yet only the preliminary surveys are being made.

Eberhard Faber, 37 Greenpoint avenue, Brooklyn, N. Y., who manufactures pencils and office supplies, is making considerable alterations to his power plant and factory which will entail the purchase of some power equipment and accessories, as well as some special automatic machinery. Inquiries are out in the trade at present covering some of the power equipment.

The Board of Water Commissioners of Detroit, Mich., will receive bids until September 14 for three 30,000,000-gal. pumping engines for the new pumping station.

The Ernst Wiener Company, 50 Church street, New York, has been appointed American agent for the Actien Gesellschaft Ober Bilker Stahlwerk of Duesseldorf, Germany, manufacturer of steel tires, axles and wheels, narrow gauge railroad cars and car equipment, steel forgings, rough and finished, up to 25 tons in size; fluid pressed forgings and wheels used in the manufacture of steam turbines.

Catalogues Wanted.—William H. De Groff, 69 Reeve place, Brooklyn, N. Y., desires catalogues of gas engines.

Milwaukee Machinery Market.

MILWAUKEE, WIS., July 20, 1909.

While the machinery trade in general is now active here, an unusual degree of prosperity, all things considered, has been experienced of late by the smaller shops, particularly those which manufacture apparatus necessary in practically all lines of industry, as well as in office buildings, hotels, public institutions, &c., the latter including motive power, lighting and ventilating equipment, transmission machinery, &c. Special structural and ornamental metal shapes, bars, angles, rods, &c., are also in heavy demand. Much of the buying is done in small lots and largely through contractors; hence purchases are based chiefly on price or immediate delivery, and the trade is not of a character that appeals to the larger manufacturers and supply houses.

This can, however, be made profitable to those who are

prepared to cultivate it, and with the increasing volume of building there will undoubtedly be a considerable surplus of orders beyond what local manufacturers are able to fill promptly. Outside houses have, therefore, a good opening for fall business, and the requirements of the Northwestern market will repay study.

Among the more important plants evidences of returned prosperity are waxing daily. One large concern, whose chief output is pumps, states that last month was the heaviest in its history, and another company similarly situated put it as the next to largest. Net profits are generally small, but the level of prices is again advancing and cutthroat competition "to keep the shops from closing" has been almost entirely eliminated.

Next to custom orders in the shops and foundries for motor vehicle and vessel parts the agricultural implement and machinery business shows the most noteworthy strength, considering the lateness of the season. Not only are existing plants busy, but new factories, as mentioned in recent reports to this paper, are under construction in all parts of the Northwest, especially in Michigan, Wisconsin and Iowa. For the Milwaukee works of the International Harvester Company a large quantity of raw material is understood to have been contracted; basis, prompt delivery. A feature of the present output there is the building of gasoline engines for use with heavy farm and traction machinery.

Power for the new plant of the A. O. Smith Company, Milwaukee, will be furnished by an electric generator of 400 kw., driven by a horizontal double acting tandem gas engine.

A steel tank for sprinkler system, 35,000 gal. capacity, will be bought by the B. J. Johnson Soap Company, Milwaukee.

The Badger Motor Car Company, Columbus, Wis., is having plans prepared for a new plant.

New England Machinery Market.

BOSTON, MASS., July 20, 1909.

The machine tool market presents no new features. The demand for both new and second-hand machinery equipment continues satisfactory for the season, and inquiries are numerous, indicating heavy buying in the fall. The supply business is better than it has been, though the trade has shown no such percentage of increase as machinery. The large buyers are purchasing machine tools in small lots, these including some of the large textile machinery concerns, the General Electric Company and the United Shoe Machinery Company.

Manufacturers of some classes of machine tools are really very much worried over the outlook, because it seems certain that they will not be able to take care of their orders even in the immediate future, to say nothing of the demand which promises to come with a more general improvement of business with classes of customers other than those who are now buying. Plans for using night shifts are now under consideration and new equipment will be installed where space permits. Doubtless announcements of further enlargements of these shops will begin to appear before long. Deep regret is expressed by managing officers that they did not take advantage of dull times to fill their storehouses. Works that were practically idle six or eight months ago are now facing a condition where production will be insufficient. One large concern has received more orders thus far this month than in any whole month of its history. This condition does not apply to the builders of standard types of machine tools, such as lathes, planers, drills and shapers, but milling machines, grinding machinery of practically all descriptions, automatics and semi-automatics, and other machines which may be designated as semi-special are finding the market so full of promise as to be ominous in the effect upon deliveries. There is apprehension also as to the labor market in New England, for good men are becoming very scarce. The automobile industry with its numerous ramifications has absorbed a vast number of all around mechanics, tool makers and other high class mechanics, which is having its effect upon the machine tool establishments. Some men are actually receiving higher wages than they did previous to the depression. To be idle much of the time for two years and then to go to work at an advance over the old schedule indicates a condition having few precedents.

The plan to consolidate the Pratt & Cady Company, Hartford, Conn., and the Chapman Valve Mfg. Company, Indian Orchard, Mass., is under way, but no definite decision has yet been reached by either company, and probably several weeks will elapse before a definite announcement of success or failure of the negotiations can be made. Adolph W. Gilbert, president of the Pratt & Cady Company, has resigned his office to accept the position of president and general manager of the Chapman Company, to take effect August 1, when he will go to Indian Orchard. It is understood that leading influences in both corporations believe that a consolidation would be profitable to both. Their lines are very similar, consisting of brass and iron valves, hydrants, cocks, gauges and kindred devices. The companies were founded at about the same time, the Chapman Company in 1874 and the Pratt & Cady Company in 1878. The former is capitalized for $1,000,000, including the $400,000 of new stock which it was recently voted to issue, while the Hartford concern has a capital stock of $400,000. It is understood that this company is somewhat cramped for quarters and in this way would benefit by the consolidation, as there is ample room for growth at Indian Orchard. The details of the proposition for merging the business of the competing corporations have not been made public, but the matter is now under consideration by the two boards of directors.

Cheney Bros., Manchester, Conn., silk manufacturers, have purchased the Trotter Mill property in that city, with the intention of offering it for the purposes of a trade school. The Connecticut Legislature has appropriated $25,000 for the establishment of two of these schools and Manchester has made application for one of them. If the State decides favorably in the matter the Cheney Bros.' offer will doubtless be accepted.

The Luce Mfg. Company, Dalton, Mass., is in the market for machine tools, either new or practically as good as new, the list comprising screw cutting engine lathe, 16-in. swing, 6-ft. or more bed, compound rest, taper attachment and cross power feed; bench lathe on stand, 16-in. turret lathe, hollow spindle, 2-in. preferred; 16 to 20 in. power feed drill press; small drill press, preferably two-spindle, or a bench press; universal milling machine, with working surface of not less than 36 in. on feed table; power hack saw and grinding outfit. The company has just been organized, with capital stock of $20,000. T. C. Luce, Dalton, is president; J. H. Cox, New Lebanon, N. Y., vice-president; John B. Woodburn, Hinsdale, Mass., secretary, and Frank W. Strong, Dalton, treasurer; the officers and C. K. Ferry constituting the directorate. The company will manufacture a number of inventions of Mr. Luce, including a gasoline engine and accessories, automobile specialties and a self-adjusting castor. A stone building formerly occupied by the Renfrew Mfg. Company will be equipped for manufacturing.

The details of the removal of the business of the Tobin Arms Company, Norwich, Conn., to Woodstock, Ont., have been completed. A new factory will be erected, the main building of which will be 45 x 100 ft., two stories. Power will be obtained from one of the Niagara Falls companies. A Canadian corporation which will probably retain the present name is in process of organization, with a capital stock of $150,000, and will take over all the assets of the present company. Frank M. Tobin, president of the American company, will move to Woodstock and will be the managing director. The plant will have double the capacity of the present factory. It will continue the manufacture of the Tobin hammerless gun, and probably other firearms and specialties will be added to the line. The business was established in 1903.

The Board of Directors of Landers, Frary & Clark, New Britain, Conn., has voted to recommend to the stockholders an increase in capital stock from $1,250,000 to $1,500,000. The stock will be sold to present stockholders at par pro rata to their holdings. The purpose of the new capital is to increase the plant and take on new lines, the business being a rapidly growing one.

The Automatic Machine Company, Bridgeport, Conn., manufacturer of machine tools, automatic machinery and gasoline engines, has let the contracts for the new machine shop to be erected as a part of the Pacific Iron Works, which the company acquired recently. The building will be of brick, 108 x 120 ft. A brick boiler house, 15 x 35 ft., will also be constructed. The company states it expects to move into its new quarters about October 1. Business is constantly picking up, more orders having been received during June than in a long time, bookings including 17 automatic wire forming machines, several automatic threading lathes and a large number of engines. The works have just made the third carload shipment of engines to Seattle this year.

The business of the Recording Cash Register Company, New Haven, Conn., has been sold by the receiver to the Pfleghar Hardware Specialty Company of that city, which in turn has transferred its purchase to a new corporation which has been organized under the name of the Recording Register & Fare Box Company. The company will occupy a portion of the Pfleghar factory, but the relation of the two corporations will be simply that of landlord and tenant. The new company has a capital stock of $30,000, and the incorporators are Henry W. Theishauser, Frank J. Linsley and Frank B. Kennedy.

The New Departure Mfg. Company, Bristol, Conn., has been operating a factory at Weissensee, a suburb of Berlin, Germany, for the manufacture of its coaster brakes. The necessity of operating this plant no longer exists and the machinery is being crated for removal to England, where a new factory will be built. President Albert F. Rockwell is about to leave for Germany to complete the details of closing the German plant and to select a site for the English works. The German factory has been employing upward

of 200 hands, with John F. Wade as superintendent. Most of the foremen are Americans from the home plant at Bristol. The company's large plant at Bristol is now running 23 hr. a day in most departments and is in an exceedingly prosperous condition.

The Beaton & Corbine Mfg. Company, Southington, Conn., manufacturer of ceiling and floor plates and other specialties, has built a new plating room with a capacity of 500 gal. of copper and 700 gal. of nickel. The room formerly used for the purpose will be fitted up as an addition to the polishing room. The purpose is to secure a more rapid production of goods, orders having increased largely as compared to any previous year in the company's history.

The Boston & Maine Railroad has purchased the water power and electric plant at Eastman Falls, N. H., on the Pemigewasset River, and other privileges on the same stream in the towns of Bristol, Hill, New Hampton and Sanbornton. While no announcement of the plans of the new owner has been made, it is understood that the railroad has in mind the electrification of the Bristol, Tilton and Belmont branches.

The New System Motor Company, 73 Market street, Chicopee Falls, Mass., has been organized as a Massachusetts corporation to manufacture a new combined motor and air compressor, the invention of Wincenty Krygowski, Chicopee Falls. The company will immediately establish a shop for the manufacture of models. Andy Pinkus is the president; John Rogonski, vice-president; Wincenty Krygowski, treasurer, and John Zimany, clerk. The combined explosive gas motor and air compressor is characterized by the inclusion of both motor and compressor within the reservoir in which the compressed air is delivered, the effect being to cool the motor, while the heat of the motor and muffler is efficient for expanding and increasing the compression of the air.

The Risdon Tool Works, Inc., Waterbury, Conn., manufacturer of machinery, dies and tools, has increased its capital stock from $15,000 to $25,000.

The Board of Contract and Supply, Providence, R. I., will receive bids until July 27 for a 10,000,000-gal. pumping engine for the city water works' high service pumping station.

Announcements of enlargements of general manufacturing plants include the following: Hathaway Mfg. Company, New Bedford, Mass., textiles, addition 29 x 152 ft., one story, for cardroom; Acushnet Mills, New Bedford, textiles, addition to main factory, 79 x 233 ft., one story, and addition to cardroom 27 x 75 ft.; Colored Worsted Mill, Providence, R. I., one story building, 24 x 100 ft., and one story addition, 38 x 99 ft.; Ponemah Mills, Taftville, Conn., steel and concrete weave shed, 200 x 673 ft., one story and a half; Windham Mfg. Company, Willimantic, Conn., additional story to one of its main buildings; Parker Shirt Company, New Britain, Conn., addition 42 x 60 ft., three stories and basement, and boiler house to increase power plant; George E. Boyden & Son, Providence, R. I., addition 49 x 160 ft., five stories; M. J. Whittall Carpet Mfg. Company, Worcester, Mass., addition 60 x 230 ft., four stories; Tweedy Silk Company, Danbury, Conn., factory, 110 x 175 ft., one and one-half stories; A. T. Way Leather Company, Danversport, Mass., four-story addition.

The Bay State Screw Company, manufacturer of machine screw products, has moved from Springfield to Hatfield, Mass.

Chicago Machinery Market.

CHICAGO, ILL., July 20, 1909.

While there have been no developments of significant interest in the machine tool trade the past week, it is nevertheless gratifying to note that the general volume of trade is at least not diminishing under the usual midsummer reaction. Ordinarily trade is expected to fall off somewhat in July, but unless the last half of the month proves less productive of business than the first half, there will be no falling off as compared with June. The greater part of the present demand continues to come from the same sources that have been supplying it for months past, but orders from miscellaneous shops and factories throughout the West have picked up considerably of late. These represent the requirements of small metal working plants of various kinds whose products are principally adapted to the needs of agricultural communities. There are, for instance, a large number of gas and gasoline engine plants scattered about the country which are making small power units for driving farm machinery and other equipment, and these are pretty generally well filled up with work. Naturally the tools used in this class of work run in the lighter sizes, and orders are as a rule individually small. It is, nevertheless, a very desirable line of trade, and so far as the West is concerned represents an aggregate of no mean importance. There is an especially good demand for grinders, and the leading makers of such tools are running behind to some extent on deliveries. One well known factory is not promising shipment on crank grinders, which are an important part of automobile equipment, earlier than 60 days from receipt of order. The great expansion in building construction is plainly reflected in the better movement of tools and machinery comprising fabricating shop equipment, hoisting and handling appliances and concrete machinery. New and improved types of the latter are constantly appearing in the market, and what but a few years ago was but of incidental interest in so far as volume is concerned now forms an important branch of machinery construction and one which holds promise of still greater development in the future.

The Ralston Car Company, which was organized about a year ago to build car construction and repair shops at Ralston, near South Omaha, Neb., has broken ground for the new plant, which will cost about $80,000. The buildings to be erected will include a construction shop, wood working shop, blacksmith shop, warehouse and office buildings. The yards will contain between four and five miles of repair tracks, and the plant will be equipped with suitable machinery for the repair of both wood and steel cars. This will include pneumatic tools, wood working machinery, punches, shears and some iron and steel machine tools. The officers of the company are: President, C. A. Ralston, Chicago; vice-president, M. S. Sean, New York; secretary, H. H. Baldridge, Omaha; treasurer, L. Howard, Omaha.

The Never-Split Seat Company, Evansville, Ind., is building a new factory building, two stories, 62 x 300 ft., with an ell 62 x 100 ft. The equipment required for this plant will include two 150 hp. boilers, 150 hp. high speed direct connected engine, a 100-kw. generator, together with steam connections, pumps, &c. There will also be required about 22 electric motors running from 2 to 40 hp., together with equipment for a dry house heating system and shaving fan and exhaust system.

The Joliet Bridge & Iron Company, Joliet, Ill., is enlarging its plant by the addition of a new structural steel and bridge shop which will add 60,000 sq. ft. to the present floor space. The shop will be equipped with modern tools and appliances, the entire floor being covered by traveling cranes. The new equipment will include locomotive cranes, electric cranes and wall cranes, electric motors, compressors, track scales and a full assortment of fabricating shop tools. Work on these improvements is now under way and when completed will increase the capacity of the plant to about 2000 tons per month. The company expects to have the new plant in operation about November 1.

Contracts have been let for seven new buildings comprising the plant to be established at Marshalltown, Iowa. by the National Denatured Alcohol Company. Eight 72 in. by 18 ft. tubular boilers will be installed, together with necessary motive power machinery. The entire cost of the plant is estimated at $125,000.

The Enamel Concrete Company, maker of heavy pressed brick machinery, is contemplating the removal of its plant from Des Moines, Iowa, to some point near an iron and steel producing center, and one that will afford better shipping facilities for the distribution of its product. Since the machinery comprising a plant equipment of this kind weighs about 175 tons, the question of freight cost is one of vital importance to the industry. While the new location has not yet been definitely selected, it is probable that the plant will be moved within the next six months.

The installation of a new 500-kw. generator with turbine and condenser in the Hastings, Neb., municipal lighting plant has been decided upon and bids for this equipment are invited by the City Council, which will give them consideration at its next meeting, July 26.

Water works improvements calling for the expenditure of about $10,000 are contemplated by the city of Monmouth, Ill. Included in the equipment required is an air lift and steam boiler.

An appropriation of $50,000 has been made by the city of Bloomington, Ill., for contemplated water works plant improvements, which will include the installation of a new pump.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 19, 1909.

While some manufacturers and merchants report a fair run of business, others note the usual midsummer dullness. Little new business of importance has come out; occasional inquiries cover a few tools, but the bulk of the requirements appear to run to single tools, usually in the medium sizes. The railroads show no indication of being active purchasers of tools in any quantity. Industrial plants display greater activity, but at the present rate of operation it will require considerable time before they become buyers of any equipment outside of that which may be required for emergency or special purposes. Medium sized planers and lathes have been in the most active demand recently, although there have been some few sales of milling machines, grinders, drilling machines and other standard types of tools. While a

continuation of rather quiet conditions for the next few weeks is not unlikely; in fact, is rather expected, the trade on the whole views the situation optimistically, believing that with the general improvement, which continues steadily in the iron and steel plants, with the leading steel mills rapidly approaching normal, it will not be many months before other industrial lines will be able to note a decided betterment, with which will come, it is believed, a marked improvement in the machine tool trade. There has been no change in the demand from abroad. Orders for some few special tools have recently been booked for export, but those for tools of the standard types are few. Specialties continue to be taken for export shipment in average quantities. The second-hand machinery trade shows little improvement; buying is considerably scattered and is confined to no particular class of tools, and trade on the whole has been irregular. The second-hand boiler and engine trade is rather dull, although there is a fair demand for new power equipment, several quite extensive propositions being under consideration.

Conditions in the foundry trade show no important change. Steel casting plants appear to be a little better engaged; the smaller crucible steel plants are fully engaged, but the larger open hearth plants are, for the most part, considerably under normal. Some few gray iron plants show greater activity, but little real improvement comes from the machinery trade.

Folsom, Crowe & Stanton, architects and engineers, have completed plans for a two-story brick garage and repair shop, to be erected for William MacNamee, on Chancellor street, between Fifty-first and Fifty-second.

Ballinger & Perrot, engineers and architects, have awarded the contract for a 100,000-gal. steel tank and tower to supply the sprinkler system for the entire plant of the Victor Talking Machine Company, Camden, N. J., to the Des Moines Bridge & Iron Company, Des Moines, Iowa.

Owing to a scarcity of the water supply furnished by the General Water Supply Company, Merchantville, N. J., the residents of Collingwood, N. J., are urging the authorization of bonds to cover the cost of a municipal water works. The proposed bond issue would cover the installation of both a water works and an electric light plant.

Plans have been completed by Sauer & Hahn, architects and engineers, for a factory building, 100 x 106 ft., four stories, to be erected at the corner of Eleventh street and Washington avenue for the 44 Cigar Mfg. Company.

The Homer Brass Works has purchased the property at the northwest corner of Water and Mifflin streets, which it has been occupying for some time under lease. The ground measures 54 ft. 8 in. by 339 ft., on which is a suitable building for the company's purposes. No further improvements are contemplated at the time.

The Media Electric Light Company, Media, Citizens' Electric Light & Power Company, Clifton Heights, Faraday Light Company, Morton, and Philadelphia Suburban Electric Light Company, Lansdowne, Pa., have been consolidated as the Delaware County Electric Company. It is understood that a large central power plant will ultimately be erected. W. R. Frunefield, Media, Pa., is president; Joseph W. Taylor, New York, secretary, and J. W. Barstow, New York, general manager of the new company.

The Schutte & Koerting Company is having plans prepared for a four-story brick addition to its plant. The new building will be used for office and shipping purposes; the pattern shop will also be installed on one floor. On completion, the portion of the present plant used for office purposes will be used as an extension to the machine shop. This company reports business in a satisfactory condition, its plant being operated on full time.

Cincinnati Machinery Market.

CINCINNATI, OHIO, July 20, 1909.

In striking contrast is the prevailing situation in machine tool manufacturing circles as compared with the conditions of one year ago. Then no such thing as improvements in plants, enlargements of departments nor increase in working forces was entertained. To-day many local plants have in progress or have outlined various improvements and all have added men. Deliveries are being extended in milling machines, lathes, shapers and drill presses two and three months from date of order. With the addition of several lists promised by the railroads soon, it is confidently expected that the situation by fall will resemble with some establishments the heavy pressure times of 1906-1907. The great difficulty with tool establishments in this section is in securing competent machinists. The bulletin board at the office of the Cincinnati Metal Trades Association is filled with requests from local tool concerns for skilled help of one kind or another, and the list is enlarging constantly. Heavy drafts upon Cincinnati's skilled workers have been made from time to time by concerns in other parts of the country, and during the depression many left the city to engage in other occupations or similar work elsewhere.

The melt of iron is increasing perceptibly each succeeding week. The stove concerns particularly are improving in this respect. The jobbing foundries making specialties of machine tool castings are putting on additional men and increasing heats in number from three to five and six per week, some pouring 75 to 100 tons per week.

Several tool concerns are making changes in their plants or are moving into new and more commodious quarters. The Lodge & Shipley Machine Tool Company has but recently completed important additions to its shops and offices and now many workmen are engaged in leveling a large plot of ground adjoining the extensive quarters in Camp Washington. The large frame house recently acquired and known as the Bates Homestead is to be moved nearer the office departments and facilities improved for quick transit between them. The homestead has been fitted up comfortably for the dining quarters of officials and heads of departments, with accommodations for from 30 to 50. Very nearly the maximum force is now employed at these shops.

The Willard Machine Tool Company, now located at 118 and 120 West Second street, Cincinnati, maker of power presses, dies and special machinery, has secured a fine tract of land at Third and Madison streets, Covington, within 8 min. of the Cincinnati Post Office, and will put up a building, hoping to be able to get into it by late September. The company will add a line of 13 ft. engine lathes, and expects to increase its capacity four times, with a floor space 90 x 100 ft.

Two or three other concerns are arranging for a change of locations and improvements in their plants, announcement of which will be made when these have been perfected.

Dealers in machinery and tools are busy; sales are being made in lots now where for a long time single tools were in order. Second-hand tools are quiet, although there are some good sized deals being consummated between concerns on an exchange basis.

The International Steel & Iron Construction Company, Evansville, Ind., reports an increasing demand for structural iron for store and building fronts; orders coming in from Bone Gap, Ill.; Richmond, Texas; Blaine, Kan.; iron work for a concrete warehouse at Homer, Mich.; Ione, Mo.; Platte, S. D.; French Lick Springs, Ind.; Amite, La.

The Pan-American Bridge Company, New Castle, Ind., secured the contract for structural steel for the new amphitheatre at the Connersville, Ind., fair grounds, about 80 tons.

The contract was recently let for the building of the Southern Stove Works plant at Evansville, Ind., which is said to be the largest stove foundry in the State. The foundry will be approximately 72 x 203 x 226 ft., of brick, and the floors will be of concrete. An L-shape cleaning and mounting room, 72 x 214 x 143 ft., will face on Sixth avenue; a warehouse and office rooms 30 x 324 ft. will face on Keller street, and in the rear of other buildings near the Illinois Central tracks the power house, rest rooms and storage departments will be located. It is expected that a number of houses will be built nearby for the benefit of the workmen.

Ground was broken last week for another building to the group comprising the plant of the American Steel Package Company at Defiance, Ohio. Increasing business suggested the need for the addition, which will be one story, of brick construction, 50 x 100 ft.

A modern power plant will be erected by Frederick Beaver of Dayton, Ohio, at Fourth and St. Clair streets in that city. The structure will be located on property 150 x 200 ft.

It is reported from Toledo, Ohio, that the Cleveland Cliffs Company of Cleveland has determined to improve its property near Ironville, a Toledo suburb, by erecting a blast furnace, large ore docks, &c.

The Buckeye Steel Castings Company, Columbus, Ohio, is completing extensive improvements to its plant. Two new buildings are about completed and will soon be fitted up as machine and pattern shops.

It is expected that the Carnegie Steel plant in South Columbus, Ohio, will be started in the early fall, as improvements and repairs ordered recently from Pittsburgh will be completed in August.

The Huntington (W. Va.) plant of the American Car & Foundry Company will build 1000 steel cars for the Chesapeake & Ohio Railroad.

The Spears & Riddle Company, Wheeling, W. Va., will soon move into its new plant nearing completion in the Glendale suburb adjoining that of the Wheeling Metal & Mfg. Company, which covers about the same amount of ground. The company will embark in a new field—that of manufacturing automobile parts.

The F. W. Gault, Jr., Brazing & Mfg. Company is a new incorporation for Louisville, Ky. The capital stock is $15,000, and is held largely by F. W. Gault, Jr., J. P. Williams, H. O. King, and M. P. Corcoran, Jr.

For the fourth annual outing of the Cincinnati Metal Trades Association employees and families elaborate preparations are on, and formal announcements of prizes, character of entertainment, &c., will be out in a few days. The date is Saturday, July 31. A capital prize of $100 in gold will be drawn for by employees in attendance at the park

and contests; a second prize of $50 will be awarded, and $150 more in prizes, ranging from $5 to $15 for proficiency in swimming contests, foot races and other forms of athletic events. The officers and directors of the association annually make this event a big affair, paying for all amusements, prizes, &c., out of the treasury.

Government Purchases.

WASHINGTON, D. C., July 20, 1909.

The following bids were opened July 13 for machinery for the navy yards:

Class 51.—Remodeling 110-ton electric traveling crane—Bidder 1, Alliance Machine Company, Alliance, Ohio, $24,000; 28, Cleveland Crane & Engineering Company, Wickliffe, Ohio, $19,600; 102, Morgan Engineering Company, Alliance, Ohio, $21,985; 121, Niles-Bement-Pond Company, New York, $20,675.

Class 61.—One No. 2 die sinking machine—Bidder 129, Pratt & Whitney Company, Hartford, Conn., $700.62; 185, Excelsior Equipment Company, Pittsburgh, Pa., $1492.

Class 71.—Two vertical duplex piston pumps—Bidder 18, Blake & Knowles Steam Pump Works, New York, $968.

Class 72.—Four ash hoisting engines—Bidder 75, Hyde Windlass Company, Bath, Maine, $325 part; 104, Mead-Morrison Mfg. Company, New York, $970.50; 173, Williamson Brothers Company, Philadelphia, Pa., $1488.

Class 81.—One generating set—Bidder 45, Dravo-Doyle Company, Pittsburgh, Pa., $12,189; 63, General Electric Company, Schenectady, N. Y., $11,460; 164, Terry Steam Turbine Company, New York, $11,350.

The following bids were opened July 12, Circular No. 519, for machinery for the Isthmian Canal Commission:

Class 27.—One piston air drill—Bidder 33, Chicago Pneumatic Tool Company, Chicago, Ill., $45; 55, Fox Brothers & Co., New York, $59.95; 71, Independent Pneumatic Tool Company, Chicago, Ill., $55.

Class 28.—One hydraulic screw punch—Bidder 15, F. S. Banks & Co., New York, $73.98; Fox Brothers & Co., New York, $67.99; 90, Manning, Maxwell & Moore, New York, $100; 101, Motley, Green & Co., New York, $101.50; 127, H. A. Rogers Company, New York, $99.20; 163, J. B. Kendall Company, Washington, D. C., $70.50.

Class 29.—One air drill and motor—Bidder 33, Chicago Pneumatic Tool Company, Chicago, Ill., $100; 55, Fox Brothers & Co., New York, $95; 71, Independent Pneumatic Tool Company, Chicago, Ill., $100.

Class 30.—Twelve upright post drills—Bidder 27, Buffalo Forge Company, Buffalo, N. Y., $194.50; 55, Fox Brothers & Co., New York, $163.32; 78, Knox & Brother, New York, $125.50; 90, Manning, Maxwell & Moore, New York, $144; 101, Motley, Green & Co., New York, $148.80; 122, Francis Reed Company, Worcester, Mass., $234; 127, H. A. Rogers Company, New York, $136.04; 149, Vermilye & Power, New York, $149.04; 150, Vogt & Williams, New York, $126; 163, J. B. Kendall Company, Washington, D. C., $151.44.

The following bids were opened July 10 for installing three air compressors with accessories at the navy yards, New York, Philadelphia and Mare Island:

Item 1, three air compressors complete; item 2, omitting condensing equipment for Philadelphia air compressor; item 3, price for Philadelphia compressor, with complete equipment; item 4, price for New York compressor, with complete equipment; item 5, Mare Island compressor, with complete equipment; item 6, bidders' specifications.

Hooven-Owens-Rentschler Company, Hamilton, Ohio, item 1, $76,719; 2, $73,390; 4, $24,332; 5, $27,568; 6, $24,279.

Wisconsin Engineering Company, Corliss, Wis., item 3, $28,187; 4, $28,362; 5, $32,472.

Providence Engineering Works, Providence, R. I., item 1, $82,500; 3, $26,100, deduct $2350; 4, $26,000; 5, $30,400, deduct $350, deduct from items 3 and 4 $300 for omitting condenser equipment.

Nordberg Mfg. Company, Milwaukee, Wis., item 1, $78,840; 2, $75,240; 3, $24,600; 4, $24,240; 5, $31,250. Add to items 3, 4 and 5, $1050. Add to item 1, $3150. Add to item 2, $2100.

Ingersoll-Rand Company, New York, item 1, $73,332; 2, $2705; 3, $22,400; 4, $22,400; 5, $28,532; 6, $78,677; 7, $24,145; 8, $24,145; 9, $30,387.

Allis-Chalmers Company, Milwaukee, Wis., item 2, $69,975; 3, $74,779; alternate, $71,975.

Laidlaw-Dunn-Gordon Company, New York, item 1; $69,850; 2, $68,305; 3, $22,895; 4, $22,895; 5, $26,710.

Sullivan Machinery Company, Chicago, Ill., item 1, $113,162; 2, $3625

The following bids were opened July 10 for installing power plant equipment at the navy yard, Puget Sound, Wash.:

Item 1, work complete; item 2, difference in price for installing a complete Holly system for disposal of drainage; item 3, difference in price for an additional fire pump; item 4, on bidders' specifications.

D'Olier Engineering Company, Philadelphia, Pa., item 1, $57,950; 2, add $500; 3, add $2850; 4, $54,950.

Engineering Corporation, Seattle, Wash., item 4, $80,700, add $300, $5800 and $2400.

Hallidie Machinery Company, Seattle, Wash., item 1, $100,418.89; 2, add $452.43; 3, add $5717.82; 4, deduct $2485, $2695 and add $125.

Pacific Engineering Company, Seattle, Wash., item 4, $74,555.

Walworth Mfg. Company, Boston, Mass., item 1, $78,890; 2, $78,890; 3, $80,460; 3, alternate, $79,320.

Charles C. Moore & Co., San Francisco, Cal., item 1, $81,825; 3, $4143.

Evans, Almiral & Co., New York, item 1, $68,798; 3, $2300; 4, $6700.

Delaval Steam Turbine Company, Trenton, N. J., item 4, two centrifugal pumps, $1710; one turbine pump, $2890; two hot water pumps, $1200.

M. W. Kellogg Company, New York, item 1, $66,500; alternate, $66,000; 2, add $585; 4, $6800; alternate, $67,200.

The following bids were opened July 10 for eight boilers, with oil burners, flues, superheaters and stack, at the navy yards, Puget Sound and Mare Island:

Item 1, bureau's plans and specifications; item 2, bidders' specifications.

Heine Safety Boiler Company, St. Louis, Mo., item 1, $106,000; 2, $21,845; 3, $84,280.

Edge Moor Iron Company, Edge Moor, Del., item 1, $99,000; alternate, $100,200; 2, $23,342; alternate, $23,644; 3, $76,104; alternate, $77,010.

Wickes Boiler Company, New York, item 2, $21,500; 3, $71,000; 4, $92,500.

Babcock & Wilcox Company, Philadelphia, Pa., item 1, $102,841; alternate, $96,103; 2, $24,532; alternate, $22,850; 3, $78,309; alternate, $73,253.

E. Keeler Company, Williamsport, Pa., item 1, $110,198; 2, $24,909; 3, $85,289.

Hallidie Machinery Company, Seattle, Wash., item 2, $30,470.

The following bids were opened July 10 for one 1000 kw. and two 1500 kw. turbo alternators for the navy yards, New York, Philadelphia and Boston:

Item 1, price for turbo alternators, pumps and accessories; item 2, bidders' specifications.

Westinghouse Machine Company, New York, item 1, $64,750.

General Electric Company, Schenectady, N. Y., item 1, $77,417; 2, $76,008.

Allis-Chalmers Company, Milwaukee, Wis., item 2, $61,736.

The following bids were opened July 10 for three motor generator sets, two excitor sets, one switchboard and accessories for the navy yard, Philadelphia, Pa.:

Item 1, work complete; item 2, bidders' specifications.

Allis-Chalmers Company, Milwaukee, Wis., item 2, $18,125.

General Electric Company, Schenectady, N. Y., item 1, $19,700; 2, $19,200; deduct $2500.

Westinghouse Electric & Mfg. Company, Baltimore, Md., item 1, $22,339

Western Electric Company, New York, item 2, three 100-kw. motor generator sets, $10,710; one 25-kw. do., $882.50; one engine driven excitor, $1364.50; switchboards, $7672.50; necessary cable wire, &c., $1453.

The following bids were opened July 10 for generating equipment and ceiling fans for the naval hospital, Canacao, P. I.:

Item 1, work complete; item 2, generating equipment complete; item 3, ceiling fans; item 4, work complete on bidders' specifications.

General Electric Company, Schenectady, N. Y., item 1, $1428; 2, $924; 3, $504.

Westinghouse Electric & Mfg. Company, Baltimore, Md., item 1, $1463.

The following bids were opened July 10 for one locomotive jib crane for the navy yard, Norfolk, Va.:

Item 1, one 40-ton locomotive jib crane; item 2, if completed in a shorter time than called for by specification.

Interstate Engineering Company, Bedford, Ohio, item 1, $44,973.

Browning Engineering Company, Cleveland, Ohio, item 2, $42,976.

Under bids opened July 6 for pumps and hot water heater for the tender Maple, the George F. Blake Mfg. Company, New York, has been awarded contract for one Riley coil heater, $30; one vertical duplex pump, $153; one duplex feed pump, $260; two Ideal pumps and governors, $100; total, $1043. Schutte & Koerting, Philadelphia, Pa., were awarded contract for the corrugated film heater at $30.

Under bids opened May 29 for supplies for the Isthmian Canal Commission, the American Road Machinery Company, Frankford, N. Y., has been awarded contract for one portable rock crusher, with elevator, at $1186.09.

The statistics of our foreign commerce for June, which have just been issued by the Bureau of Statistics of the Department of Commerce and Labor, show that the imports of merchandise exceeded the exports in that month by more than $7,000,000. This is the first month in 12 years in which our imports have exceeded exports. This development has been foreshadowed by the course of trade for the past few months, during which imports have been increasing heavily, while exports have either declined or shown but a small gain. The June merchandise imports footed up $124,693,497 and the exports $117,535,393. The year's returns of merchandise trade are compared in the subjoined table with the fiscal years 1908 and 1907:

	1909.	1908.	1907.
Exports	$1,663,126,316	$1,860,773,346	$1,880,851,078
Imports	1,311,948,592	1,194,341,792	1,434,421,425
Excess of exports.	$351,178,316	$666,431,554	$446,429,653

Reeves Brothers, Niles, Ohio, are building two hot blast stoves for the Republic Iron & Steel Company, Youngstown, Ohio, a stand pipe for the water works at Syracuse, N. Y., two 55,000-bbl. tanks for Marcus Hook, Pa., three similar tanks for the Oklahoma oil fields, and five kilns for nodulizing ore for the Central Coal & Iron Company, Holt, Ala.

HARDWARE

ONE of the features of our national well being which must be regarded with unmixed satisfaction is the progress in agriculture, industry and commerce which is characteristic of the South. This progress is so marked as to render this section one of the most promising in the country so far as the further development of business interests and general well being are concerned. The many changes which have already taken place in agricultural methods are not only giving a much larger yield per acre of the great staples, but are inducing the cultivation of new crops and on the whole securing a much increased return from the diversified products. In connection with this there is a really remarkable development of manufacturing interests as represented in the erection of mills and plants for the fabricating of a largely increased line of products from the more than $2,000,000,000 invested in Southern manufactures. The significance of this amount, which in itself represents a very respectable investment even in these days of colossal expenditure, is found in the fact that it chronicles an advance of nearly 700 per cent. in less than 20 years.

In addition to this material development, it must be remembered that the new spirit of energy and hopefulness which has produced this progress is still dominant, the South being characterized by a courage and enthusiasm which is continuing the good work already accomplished. Those who take a broad and patriotic outlook over our national domain and the elements which contribute to our national wealth and strength note these conditions with peculiar gratification. At the same time those who are looking over the country with a view to selecting fields for special commercial or industrial effort will not fail to observe the opportunities which are thus presented for enterprise and investment, the improving of which will add still further to the development of prosperity in the Southern States and through them to the prosperity of the nation at large.

In connection with this general advance there has been within the past few years especially a noticeable improvement in the Hardware stores of the South. There is in them evidence of a new and progressive spirit, and the adoption of up to date methods is becoming general. In the South, however, as in every other section of the country, there is still room for further improvement. Many stores in which Hardware and related lines are sold have failed to respond to the stimulating influences which are making so many changes in the business methods employed in retail distribution. This is a matter to which each merchant for himself should give attention as essential to his own success. Here is also a proper field for association activity, which should aim practically and persistently for the general uplifting of the Hardware stores of the country.

Condition of Trade.

Striking evidence of substantial progress is seen in market conditions, the features of which are increasing demand, the receipt of larger and better assorted orders, withdrawals of prices in leading lines simultaneously with announced advances in important staples, and an improvement in collections. Some experienced executives are bending energies to the accumulation of stock, both by the increase of forces and longer hours, against what they believe will be an insistent demand for fall business. Well-informed Hardware men report liberal buying in certain commodities and prompt payments, one official estimating that fully 90 per cent. of the customers of his house are discounting bills for current business. There is also reliable testimony as to a diminution of price cutting among jobbers and instances are found in representative lines where the month's orders are fully 10 per cent. ahead of any preceding corresponding period so far this year. Large building operations which have been making headway for the past six months are causing a better demand for merchandise, from raw to finished materials, including tools necessary for installation. The disorganization and price-cutting noticeable earlier in the year have practically ceased, and manufacturers are now inclined to ask advances rather than make concessions. Apparent progress in settling the tariff muddle is also helping the situation.

Chicago.

Yielding to the influences of the season, trade is drifting along without incident of especial significance so far as new demand is concerned. The orders now being received by Hardware jobbers and manufacturers are mainly of a supplementary character designed to meet current requirements. The heaviest volume of business now moving is composed of shipments in execution of existing contracts, and the consensus of opinion seems to be that these have been conservatively gauged and are not overreaching the present consumptive capacity of the country. The fact that buyers are specifying freely against such contracts tends to confirm the correctness of this view. While but little change is observed in the general level of prices, underlying conditions in nearly all divisions of the market are quite favorable to progressive betterment. It cannot be denied, however, that the forces which are ultimately relied upon to establish more uniform stability are not fully enough developed to place all lines upon a footing firm enough to withstand successfully the pressure of competition. As the time draws near when purchases of Wire and Wire products for the fall season will occupy the attention of the trade, interest in the prices that will govern these transactions is naturally intensified. While at this writing no changes in the present schedules have been announced, the impression prevails among the trade that an advance is imminent and that it is likely to precede the commencement of fall order bookings. Ordinarily this movement has its beginning in the latter part of July and is started by the Southern trade, who are the first to come into the market. It is assumed, therefore, that the position of the leading mills respecting Wire and Wire Nail prices for this period will be definitely indicated in the near future. In noting the relative activity of various lines of goods it is observed that those directly influenced by building construction are well in the lead, while others dependent upon manufacturing industries are in many cases making slower headway. Thus Builders' Tools are generally in good demand and the factories making Builders' Hardware are better filled with work than they

have been for a long time. Barring possible reverses in the crop prospects between now and the first of September, there seems to be no obstacle in the way of continued market improvement.

NOTES ON PRICES.

Wire Nails.—The mills are largely employed in filling orders already booked, against which specifications are being received in good volume, while new business being placed for shipment within 60 days is satisfactory. The upward tendency in the price of some raw materials it is believed will lead shortly to higher prices for Wire products. The market is firm at the following quotations, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers	$1.70
Carload lots to retail merchants	1.75
Less than carloads to jobbers	1.75
Less than carloads to retail merchants	1.85

New York.—The distribution of Wire Nails in this immediate territory continues in moderate quantities. Owing to delayed shipments from mill the assortments of some of the wholesale dealers are becoming broken. This, however, is only temporary. Small lots of Nails at store are held on the basis of $1.90 to $2 per keg.

Chicago.—Though light in comparison with the heavy buying brought out by the minimum price in May, more new business is being placed than is usual at this season. Specifications continue heavy and the frequent requests from buyers for early delivery of their orders indicate that consumption has been large enough to prevent any general overaccumulation of stocks. The leading mills are running full, but shipments are going forward with reasonable dispatch. Rumors of an impending advance are still heard, but nothing concerning the matter is given out officially. Absolute firmness characterizes the present price schedule. We quote $1.88, Chicago, in car lots to jobbers and $1.93 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—Conditions in the Wire Nail trade are active, and, while the mills are operating mostly on specifications against contracts received prior to May 15, a large amount of new business has been booked since that date at the full price of $1.70 per keg, and against which consumers are specifying very freely. There is a decided scarcity in the supply of both Bessemer and Open Hearth Billets, and prices have advanced fully $1 a ton in the past week. The demand for Wire Rods is very active, one leading mill having recently retired from the market as a seller, and these conditions are taken to indicate strongly that possibly within a short time there may be another advance in prices of Wire Nails. One report has it that prices on Rods are shortly to be advanced from $29 to $31 a ton, and if this is true an advance in prices of Wire Nails would be in order. The mills are still taking Nail contracts for shipment within 60 days from date of order, but will not contract for delivery beyond that date at present prices. We quote Wire Nails at $1.70 per keg in carload lots, f.o.b. Pittsburgh, and the market is very strong at this price.

Cut Nails.—New business is being placed with the mills in moderate volume, while specifications on contracts show more activity. The market is gradually growing firmer in consequence of the higher prices of steel and the prospect of a still larger demand. Concessions of 5 to 10 cents per keg are made from the regular quotation of $1.80, base, f.o.b. Pittsburgh. Iron Cut Nails are held at an advance of 10 cents per keg over Steel Cut Nails in the Western market, but in the East this differential is not observed.

New York.—Demand in the local market is moderate, but continuous. Cut Nails are held on the basis of $1.90, in small lots at store, but as some manufacturers are stiffening up in price there is a prospect of higher prices being charged at store.

Chicago.—Considerable improvement is noted in the demand for Cut Nails. Jobbers' stocks are moving at a better rate and a fair amount of new business is coming to the mills. Prices have firmed up and the tone of the market is considerably stronger than it has been for some time. Current prices which we quote as follows are said to be evenly held: In car lots, to jobbers, Steel Cut Nails, $1.88; Iron Cut Nails, $2.03.

Pittsburgh.—Stocks of Cut Nails at the mills and also in the hands of jobbers are very light, and there is a temporary scarcity in some sizes, but this will probably soon be overcome. A moderate amount of new business is being placed and specifications against contracts are coming in freely. The mills insist that with present high prices on steel there is no money in making Cut Nails at ruling prices and that an early advance in the market is imperative. The regular price of Cut Nails is $1.80 base, f. o. b. Pittsburgh, but this continues to be shaded from 5 to 10 cents per keg. The condition of the market is strong, and an early advance in prices by the mills would not be surprising.

Barb Wire.—The buying movement is over for the present and mills are engaged in filling specifications on contract orders, which will keep them busy for some time. Prices are well maintained at regular quotations, which are as follows, f.o.b. Pittsburgh:

	Painted.	Gal.
Jobbers, carload lots	$1.70	$2.00
Retailers, carload lots	1.75	2.05
Retailers, less than carload lots	1.85	2.15

Chicago.—There is but little new business being entered, but heavy shipments are going forward from the mills in execution of contracts placed in the early part of May. New buying for the fall season is expected to begin early in the coming month in the South and Southwest, and in the meantime the mills have enough orders on their books to keep them busy. The market continues firm and unchanged. We quote as follows: To jobbers, Chicago, car lots, Painted, $1.88; Galvanized, $2.18. To retailers, car lots, Painted, $1.98; Galvanized, $2.23; retailers, less than car lots, Painted, $2.03; Galvanized, $2.33. Staples, Bright, in car lots, $1.88; Galvanized, $2.18; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—The mills are running entirely on specifications against contracts, new orders being very light, as they always are at this season of the year. There still remain some contracts to be filled and the mills making Barb Wire have put enough business on their books to carry them through the present dull period and up to the time that fall trade opens, which is expected to be early in August. Prices are very firm and we quote: Galvanized Barb Wire at $2; Painted, $1.70 per ton in car load and larger lots, f. o. b. Pittsburgh, subject to usual terms.

Fence Wire.—New business is comparatively light, but mills are busy filling orders already on their books. The market is firm and quotations per 100 lb. to jobbers in carload lots are as follows, on a basis of $1.50 for Plain and $1.80 for Galvanized, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days, the usual price to retailers being 5 cents additional:

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.50	1.55	1.60	1.65	1.75	1.85	1.95	2.05
Galvanized	1.80	1.85	1.90	1.95	2.05	2.15	2.55	2.65

Chicago.—Some new orders are being entered, and except on nearby deliveries an advance over the present price is being asked. Present conditions point to a heavy demand for fall consumption from Fence manufacturers who anticipate an active trade through the coming season. The mills are well occupied with shipments of accumulated orders now on their books. Prices are firm and well maintained. We quote as follows: Car lots, to jobbers, $1.68, base, f.o.b. Chicago.

Pittsburgh.—The mills are busy on specifications against contracts, against which buyers are specifying freely, and are also booking a fair amount of new business. It is stated that some mills are asking an advance of $1 to $2 a ton on contracts for Wire for forward delivery. The market is very firm, and we quote Plain Wire at $1.50 and Galvanized at $1.80 in carload and larger lots, f.o.b. Pittsburgh, subject to usual terms.

Rope.—There is nothing of noticeable importance in the Cordage market, as demand continues moderate, and

in the majority of cases for nearby requirements. Orders are said by some to be about equal to those of last year in number, but to represent a reduced tonnage. The following quotations represent the market for moderate quantities: Pure Manila of the highest grade, 8¼ to 8½ cents per pound, base; Sisal of corresponding quality, 7½ to 7¾ cents per pound, base; lower grades of Pure Manila ¼ cent less than the foregoing quotations. Second grade Sisal is quoted at 6½ cents and third grade at 6 cents per pound. Jute, ¼ in. and up, No. 1, is quoted at 6¼ to 6½ cents, and No. 2 at 5¼ to 5¾ cents.

Bolts.—The prices on Carriage and Tire Bolts, Machine Bolts, Coach and Lag Screws, &c., which have been quite irregular, are somewhat stronger in tone. Manufacturers of these lines at a conference on Tuesday made advances equivalent to about 2½ per cent.

Builders' and Shelf Hardware.—The leading manufacturers of Builders' and Shelf Hardware, including Door Checks, on the 17th inst. notified the trade of withdrawals of prices on these goods. Announcements of new prices, effective July 19, are also made, which approximately average about 10 per cent. advance.

Wires, Cables, Etc.—The American Steel & Wire Company, Chicago, Ill., issues a pamphlet under date July, 1909, containing list prices of Rubber Covered Wires and Cables, Lamp Cord and reinforced Portable Cord. This booklet supersedes that of January 1, 1909.

Chain.—In sympathy with conditions existing in nearly all lines of finished material prices on Chain are very strong and there is an active demand. Without consulting with other manufacturers the Standard Chain Company of Pittsburgh has advanced prices on Coil Chain from 5 to 10 per cent. and on Bright Chain from 10 to 15 per cent., these prices having gone into effect Monday, July 19. It is stated that other manufacturers of Chain have independently made similar advances, and the whole market on Chain is regarded as decidedly firm and showing a strong tendency towards higher values.

Window Glass.—The Eastern Window Glass Jobbers' Association held a meeting on July 20, but action on prices has not been announced at the time of this writing. The Western Window Glass Jobbers' Association will hold a meeting in the near future. Demand continues in about the same volume as for some time, which is very moderate. Prices recommended by the Eastern Window Glass Jobbers' Association, from jobbers' list, October 1, 1903, for territory east of the Alleghany Mountains are as follows: New England States, from jobbers, Single, 90 and 35 per cent., and Double, 90 and 40 per cent.; New York State, Single, 90 and 35 per cent., and Double, 90 and 40 per cent.; New York State, factory shipments, Single, 90 and 45 per cent.; Double, 90 and 50 per cent.; some portions of Pennsylvania are accorded discounts 5 per cent. better than other States; in the Southern States discounts vary from 90 and 25 to 90 and 40 per cent. on Single and from 90 and 30 to 90 and 45 per cent. on Double, from jobbers.

Linseed Oil.—The desire of some crushers to dispose of carloads of Oil at less than regular quotations, rather than run the risk of carrying their high priced Oil until the new Seed crop comes into the market, continues a feature of the situation. There is comparatively little of large new business, and the anxiety on the part of these crushers has a tendency to cause large buyers to postpone buying on a declining market. It is reported that carloads of Oil have been offered at 57 to 58 cents, on the basis of Western Raw. Local business is moderate and jobbing prices are unchanged. Quotations for 5 bbl. or more are as follows: State and Western Raw, 60 cents per gallon; City Raw, 61 cents per gallon, with the usual advance of 1 cent for less than 5-bbl. lots. Boiled Oil, 1 cent advance on Raw.

Spirits Turpentine.—The firm tone of the Savannah market has continued and is reflected here, although the net results of the fluctuations of the week show a falling off in price of ½ cent per gallon. Some in the trade think that prices will be higher rather than lower in the near future. Demand from Paint and Varnish manufacturers in the local market is moderate. The New York market is represented by the following quotations: Oil Barrels, 48½ to 49 cents; Machine Made Barrels, 49 to 49½ cents per gallon.

President Henry R. Towne on the Outlook.

HENRY R. TOWNE, president of the Yale & Towne Mfg. Company, New York, in response to an inquiry for an expression of his views on the general situation, and especially regarding Builders' Hardware, says: "There is remarkable activity in the building trades all over the country, which is symptomatic of a return of confidence in all directions, because it implies the existence of free capital available for investment in buildings of every kind, not only large commercial buildings, hotels and factories, but dwellings of every class. Also because it signalizes returning confidence on the part of those to whom that capital belongs and the belief that increased facilities are going to be needed and that building operations are probably cheaper now than they will be in the future. Therefore these conditions are most encouraging indications of restored confidence, activity and soundness. The moderate advance in prices is justified both because of the increased activity in trade thus indicated and also because of the steady, although gradual, advance in the cost of materials and other values. Under these conditions it is believed that the prices thus established will be firmly maintained during the coming season."

WE desire to put our readers on their guard against an impostor who has lately been operating in central New York State. A manufacturing concern in that territory states that it was recently visited by a man who represented himself as connected with a Melbourne, Australia, house. He seemed to be unusually well posted on trade matters in the Hardware and metal working line and to have an extensive acquaintance among manufacturers. A persuasive request for a "loan" was made before his departure. Subsequently the New York manufacturer had occasion to look up his claims and failed to discover any Melbourne house of the name given or of an English silverware concern, to the head of which he intimated he was related. Further inquiry showed that the man had been playing the sharper's game for years in England and America. At one time he claimed to be connected with the family of a well-known London house handling American tools and machinery. He is described as 40 to 45 years of age, well dressed and dapper in appearance, quite English in his manner, with close cropped gray hair, about 5 ft. 7 or 8 in. in hight and weighing 150 to 160 lb. A number of his teeth are missing, giving him a peculiar appearance.

THE National Association of Jobbers of Wrought Pipe and Fittings, 505 Commerce street, Philadelphia, Pa., has issued an eight-page booklet, entitled "The Right Way to Figure Profits," which contains interesting data relating to a much discussed subject. Both sides of the question are considered and a number of examples cited to afford a better understanding. On the last page is a table showing the percentage of cost which must be added to effect a given profit on a sale, the percentages ranging from 5 to 100 per cent. The author of the booklet is Thomas A. Fernley, secretary of the association.

HENRY CLAY LOWE, president of the Lowe Brothers Company, Dayton, Ohio, died on the 4th inst., at his home in that city. Mr. Lowe was in his sixty-first year, and had been associated with his brothers, Henry C. Lowe and Houston Lowe, in the Paint manufacturing business since September 1, 1872.

THE general offices of the Whitman & Barnes Mfg. Company have been moved from Chicago to Akron, Ohio. Only the factory offices and the purchasing department will remain at the Chicago plant.

The R. & J. Dick Company's Balata Belting.

THE R. & J. Dick Company, Ltd., Glasgow, Scotland, has recently opened offices and warerooms at 50 Church street, New York, where a stock of the various sizes of its Balata belting is carried. This belt was patented in 1886, after 20 years' experimenting, and during the life of the patent the company was the sole manufacturer, but on the expiration of the patent the belt had attained such a reputation that a number of other manufacturers started to make imitations. The company calls attention to its belting as especially noted for its strength and durability as well as perfect uniformity. It is stated that belts which have been running for a number of years not only retain their original strength of driving power but do not show the slightest signs of tear and wear. Another feature of the belts is their strong gripping power, which enables them to transmit without any loss the whole power given off by the engine. The belts can be run in any atmosphere either dry or damp, and even through water if desired, and as they have no joints a frequent source of failure in other belts is thereby avoided. The R. & J. Dick Company is capitalized at £650,000, and its belts have had an extensive sale in all parts of the world.

The Chicago Retail Hardwaremen's Picnic.

A VERY complete programme has been prepared for the fourteenth annual picnic to be held by the Chicago Retail Hardware Association at Columbia Park on Wednesday, July 28. The events of the day will, as usual, comprise numerous games. In the target shooting contest, which will be both open and for members only, six prizes will be offered in each division. Five prizes are to be distributed among the winners of the bowling contest. A liberal distribution of prizes will also be made at the races, of which there are several scheduled for men, women, boys and girls. The baseball games will be a marked feature of interest, as three games will be played: One will be between members composed of dealers north of Madison street *vs.* those south of Madison street; a second will be an open game and the third will be for boys of 15 years and under. To each member of the winning teams in the last two events, including the umpire, a knife, donated by the Chicago Hardware Association, will be given.

Over 75 articles have been donated as prizes for this occasion by Hardware manufacturers and jobbers. The following persons will preside as judges of the contests: W. G. Cutler, W. T. Gormley, W. F. Waller, William Brunow, Daniel Stern, W. H. Bennett, Andrew Dease, John Mills, Geo. W. Trout, R. T. Elliott, A. A. Ainsworth, Charles Smith, Joseph McVoy, William Stephens, G. R. Lott.

THE STORE of Charles J. Gray, Gloucester, Mass., dealer in Cutlery, Firearms and Sporting Goods, was damaged by fire recently, but the loss was not so serious as at first feared, being about 25 per cent. Business was hardly interfered with, as the store was open by 8 o'clock of the same day.

G. F. GRAHAM has resigned as secretary of the F. Hersh Hardware Company, Allentown, Pa., taking effect August 14, and has accepted a position as manager for the A. M. Holter Hardware Company, Helena, Mont.

FLOYD L. HAMILTON has purchased the business of the Stuart-Clure Company, Pullman, Wash., including Shelf and Heavy Hardware, Stoves, Tinware, Housefurnishings, Window Glass, Paints and Oils.

THE WAREHOUSE of the Columbia Hardware & Furniture Company, Columbia, La., was recently destroyed by fire.

W. H. PHILPOT has opened up a Hardware store at Dike, Iowa, carrying a line of Hardware, Stoves and Tinware.

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Loving Cup Presented to Chas. S. Hubbard.

A PLEASANT echo of the recent conventions of the American Hardware Manufacturers' Association and the Southern Hardware Jobbers' Association held in Pittsburgh was the presentation of a silver loving cup to Chas. S. Hubbard of the Ames Shovel & Tool Company, Beaver Falls, Pa., by his fellow members of the committee appointed to entertain the delegates at these conventions. It will be recalled that a general Entertainment and Reception Committee was appointed, of which Mr. Hubbard was made chairman. He did a large amount of work in this position, and the great success attending the social features of the convention was so largely due to Mr. Hubbard's efforts that his fellow members decided to show substantial recognition of his splendid work.

After a canvass of the members it was decided to present him with a silver loving cup, which was given to him on Friday evening last, at the Pittsburgh Country

Club. It so happened that Mr. Hubbard was attending a private dinner party at the club that evening. Severn P. Ker, general sales manager of the Republic Iron & Steel Company, was selected to make the presentation speech, which he did in a very happy manner. Mr. Hubbard was taken completely by surprise, not having had an inkling of what was in store for him. He responded to Mr. Ker's remarks in a happy vein, concluding by singing the well-known "Stein Song," all present joining in the chorus.

The cup was designed and made by the Gorham Mfg. Company of New York and is of sterling silver, lined with gold. It stands about 15 in. high and is beautifully engraved, having on it a reproduction of a shovel with the word "Ames" cut above it, typical of the name of the Ames Shovel & Tool Company and its product of shovels, and also contains these inscriptions: "Presented to Charles S. Hubbard in Appreciation of His Services as Chairman of the Pittsburgh General Committee," and, on the reverse side, "Joint Convention of the American Hardware Manufacturers' Association—Southern Hardware Jobbers' Association, at the Hotal Schenley, June 9, 10, 11, 1909."

Verbal invitations were extended to nearly 50 of the leading manufacturers of Pittsburgh to be present, but many were out of town and others had previous engagements and could not attend. However, more than 30 of Mr. Hubbard's friends, who had served on various committees, were present, as follows: S. A. Benner, L. C. Bihler, John W. Dix, of the Carnegie Steel Company; Geo. L. Claypool and Severn P. Ker of Republic Iron & Steel Company; Thomas W. Smith and W. G. Costin of the Pittsburgh Screw & Bolt Company; Arthur E. Crockett of the Standard Chain Company; Robert Garland of the Garland Nut & Rivet Company; J. W. Downer of the National Tube Company; Robert Geddis, W. C. Moreland and Roland Gerry of the Jones & Laughlin Steel Company; Chas. J. Graham and H. C. Graham of the Graham Nut Company; Wm. H. Hays of the Iron City Tool Works; W. L. Hirsch of the American Steel & Wire Company; John W. Hubbard and R. L. Mason of Hubbard & Co.; Robert A. Walker of *The Iron Age* and nearly a dozen others. The occasion was a most pleasant one and was thoroughly enjoyed by all present.

Price-Lists, Circulars, Etc.

Manufacturers in Hardware and related lines are requested to send us copies of new catalogues, price-lists, &c., for our Catalogue Department and for notice in this column.

GREGG HARDWARE COMPANY, Detroit, Mich.: Catalogue No. 2, containing 216 pages, illustrating a varied and extensive line of Mechanics' Tools, Factory and Shop Supplies.

ACME ROAD MACHINERY COMPANY, Frankfort, N. Y.: Special Crusher catalogue No. 7, relating to Road Building Machinery, Contractors' and Township Supplies, &c.

G. M. YOST MFG. COMPANY, Meadville, Pa.: Catalogue devoted to the line of Yost Vises, including the New Universal Woodworkers', Stephens' Improved Machinists', Quick Acting Machinists', Quick Acting Blacksmiths', Stephens Automatic Jewelers', Solid Jaw Parallel and New Manual Training Vises.

KNAPP & SPENCER COMPANY, Sioux City, Iowa: Pages to insert in its loose leaf catalogue, illustrating summer and fall goods.

Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers catalogues, price-lists, quotations, &c.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM HORNER & KREUTER, Knox, Ind., whose stock of Shelf Hardware, Stoves, Tinware, Window Glass, Agricultural Implements, Paints, Oils, Harness and Buggies has been destroyed by fire.

FROM AUSTIN HARDWARE COMPANY, Austin, Pa., which was completely burned out on July 14. The company does a wholesale and retail business.

FROM C. S. ANGELL COMPANY, manufacturers' agent and wholesale dealer in Hardware and Specialties, 62 Weybosset street, Providence, R. I. The company has recently been organized, its business being largely the sale of special lines to the better class of retail trade throughout New England, although a general line of Shelf Hardware will also be handled.

THE W. W. BAKER HARDWARE COMPANY, Kansas City, Mo., incorporated with a capital of $25,000, has established a jobbing Hardware business at 1213-15 Walnut street, in addition to which it is planned to locate small branches in different sections of the city to handle Hardware and Paint. One such branch has already been established in the southern part of the city. The downtown store is being fitted up with the Warren Shelving, and there will be a handsome room for the display of Builders' Hardware. The main store was formally opened on Saturday, July 17. The officers of the company are: W. W. Baker, president; A. M. Hughes, vice-president; Joseph Brauch, secretary and manager.

A. A. WALRATH, Fort Plain, N. Y., was burned out on the 9th inst., the loss being estimated at $40,000, with insurance of $25,000. He is planning to rebuild the portion of the works destroyed. Mr. Walrath manufactures Broom Corn Machinery and Machine Corn Huskers. A feature of the business is the plant for lithographing on tin, used in connection with brooms, &c.

This department is open for the discussion of questions which arise in the practical conduct of the Hardware business. Our readers are invited to contribute, submitting inquiries or answering questions.

Correspondents are expected to give their names and addresses, but in order to encourage frank expressions of opinion the advice of our correspondents will be treated in confidence, names and addresses not being published.

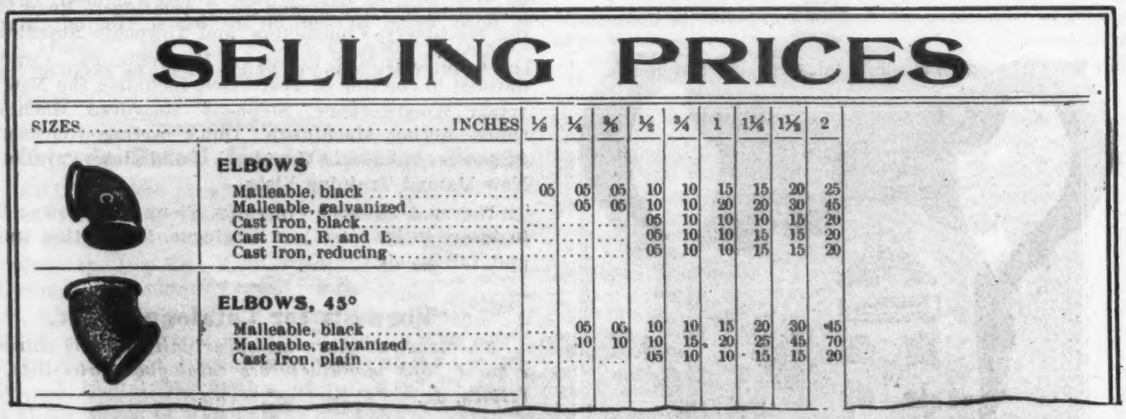
For convenience, Questions or Answers should be addressed to THE IRON AGE QUESTION BOX, 14-16 PARK PLACE, NEW YORK.

certain goods so as to enable them to meet the quotations of mail order houses and department stores are presented below. It will be noticed that our correspondents consider it desirable to make an effort in this direction, but in a frank and straightforward fashion. That manufacturers and jobbers are ready to co-operate is also pointed out.

FROM KENTUCKY: We certainly think that it is wise, as it is the very wisdom of buying. The buyer, however, should be cautious in putting such things up to the seller, as a seller very often thinks if Brown buys Files at a certain figure Jones does so too, and as a result, Jones, without effort or knowledge of this, gets the same figure. It seems to us just and right for any retail buyer to obtain any article at the lowest possible figure in an honorable way.

Frank and Honorable.

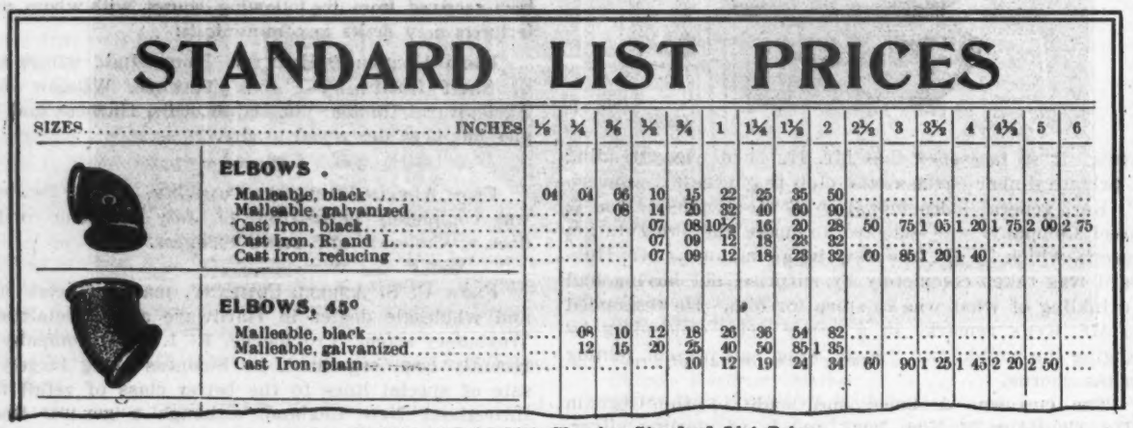
A buyer should know how and where he wants to use the article before he buys it, and then he can with ease tell what price he must own it at. It then remains for him to obtain it at that figure. If one jobber cannot supply him perhaps another can. Almost any jobber will assist a retailer if he



SELLING PRICES

SIZES ..... INCHES	⅛	¼	⅜	½	¾	1	1¼	1½	2
ELBOWS									
Malleable, black	05	05	05	10	10	15	15	20	25
Malleable, galvanized	....	05	05	10	10	20	20	30	45
Cast Iron, black	....	....	....	05	10	10	10	15	20
Cast Iron, R. and L.	....	....	....	05	10	10	15	15	20
Cast Iron, reducing	....	....	....	05	10	10	15	15	20
ELBOWS, 45°									
Malleable, black	....	05	05	10	10	15	20	30	45
Malleable, galvanized	....	10	10	10	15	20	25	45	70
Cast Iron, plain	....	....	....	05	10	10	15	15	20

Face of Price-List, Giving Retail Selling Prices.



STANDARD LIST PRICES

SIZES ..... INCHES	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
ELBOWS																
Malleable, black	04	04	06	10	15	22	25	35	50	....	....	....	....	....	....	....
Malleable, galvanized	....	....	08	14	20	32	40	60	90	....	....	....	....	....	....	....
Cast Iron, black	....	....	....	07	08	10½	16	20	28	50	75	1 05	1 20	1 75	2 00	2 75
Cast Iron, R. and L.	....	....	....	07	09	12	18	28	32	....	....	....	....	....	....	....
Cast Iron, reducing	....	....	....	07	09	12	18	23	32	60	85	1 20	1 40	....	....	....
ELBOWS, 45°																
Malleable, black	....	08	10	12	18	26	36	54	82	....	....	....	....	....	....	....
Malleable, galvanized	....	12	15	20	25	40	50	85	1 35	....	....	....	....	....	....	....
Cast Iron, plain	....	....	....	....	10	12	19	24	34	60	90	1 25	1 45	2 20	2 50	....

Reverse Side of Price-List, Showing Standard List Prices.

Pricing Malleable Iron Fittings.

Another reply to the inquiry for "the best arrangement for price cards or price books of Malleable Iron Fittings for use in charging for work done in the shop, and also for retailing in the store," has been received from a house doing a wholesale business in plumbing, steam and hot water heating supplies, as follows:

FROM IOWA: We noticed in a recent issue of *The Iron Age* a request for a good method of pricing Malleable Fittings. We are sending a copy of the Handy Price-List, which we furnish to our customers free of charge. The standard list price is on one side of the card and the Fittings are grouped on the other side, from 5 cents up, making the even nickels.

We reproduce herewith the first two divisions of the Handy Price-List referred to, which will give a clear idea of our correspondent's methods.

"Demanding" Low Prices.

Further replies to the question as to whether it is wise for retail Hardwaremen to *demand* given prices on

uses the right argument, but no jobber would lift his finger for a troublesome, fretful, disagreeable buyer. If he meets the seller in a frank, honest way the buyer will get what he wants without much worry or trouble on his part. Our experience in buying has been to request, not demand. Demand is a strong word and means strong, often ugly work.

FROM ARKANSAS: I would say NO in reply to this question. Any good Hardware dealer can go to the jobbers he buys from and purchase any article he wants at a price that will help him to combat the big city retail stores and catalogue houses, if he will demonstrate to the jobber that he is going to use that article to meet unfair competition, and is energetic enough to take care of his trade territory the same as his competitor is doing.

Jobbers and Makers Ready to Help.

My policy is to meet competition with its own weapons and I have never lost on a proposition yet. If a small dealer has these conditions to contend with and does not know how to meet them, I will venture the assertion that he is not a good, live, active member of his State Hardware Association. I would advise him to take out a membership at once and become a regular attendant at all State meetings and be a live wire dealer. If the jobbers and manufacturers know him to be this sort of a man he will find that they will always have something for him in the way of

prices and methods that will put him in a position to take care of his own.

FROM KENTUCKY: My answer in short is, emphatically, Yes. And for more reasons than you have time to hear, but the principal reason is that without the small merchants, or rather if all retail merchants other than the "great retail stores" of the cities were eliminated, the jobber would be without a job, as the manufacturer would sell directly to these stores. Therefore, inasmuch as the jobber exists by reason of many thousands of small retailers, why should they not have *more* consideration than the few great retail stores of the big cities?

Omissions in Bills of Lading.

We have already published a number of letters in reply to the question, "Why do manufacturers and jobbers in shipping goods fail to put weight and rate of freight in bills of lading?" from manufacturers and jobbers as well as retailers. Other comments from retail merchants, in which a good deal of complaint is made, are given below.

FROM ILLINOIS: While many shippers give full particulars, there is room for improvement, which should be brought about for our mutual benefit.

FROM TEXAS: Your correspondent is quite right in claiming a great disadvantage when the weight and freight rates on shipments are left out. It seems, however, that the process of getting rates and weights inserted is such a laborious one that the jobbers and manufacturers prefer getting around it if possible.

FROM INDIANA: We do not find the weight and rate of freight marked on one bill of lading in 10. This has always been the case since we have been in the Hardware business. We have the classified rates of freight and weigh goods, so that we know whether our freight bills are right or not, but it would be a great help if shippers would always put actual weight and rate of freight on the bill of lading.

FROM MAINE: We think, without question, shippers should mention shipping weight and rate of freight on bills of lading. It would be of great help to merchants.

FROM MICHIGAN: A great many of our shipping bills have no weight or rate noted; some have the weight noted, but seldom, if ever, any rate given. We think it would be a good idea to have both noted on the bill of lading to check up with the railroad company.

FROM MISSOURI: It would be both profitable and pleasant if weight and rate of freight were stated in bills of lading.

An Elaborate Fancy Ware Display.

Scroll Work Covered with Pink Outing Flannel Used with Good Effect.

WE recently illustrated a window display installed by S. E. Kerney for the Ernst Hardware & Plumbing Company, Seattle, Wash. Another such display of exceptional beauty and artistic success is reproduced herewith. The scroll work forming the main design was of ½-in. lumber covered with light pink outing flannel edged with white cotton batting and lighted with 2-cp. frosted miniature bulbs and 8-cp. frosted bulbs distributed at intervals. Frosted holly was hung on the face of the scroll work. In the corners about the center circle and in the arch above tinsel was used, while a pot of mistletoe was set on the top shelves on either side.

The scroll work was set about 20 in. in front of the background, which was dark pink outing flannel, pleated. The floor was covered with the same material, only white, and was sprinkled with diamond dust. Carvers, Chafing Dishes, &c., were placed on the shelves in the scroll work, while Chafing Dishes, Carvers, Serving Dishes, Trays, Silver Ware, &c., were arranged on the floor, with decorations of frosted holly and poinsettia.

Fancy Ware Display of Ernst Hardware & Plumbing Company.

New England Outing.

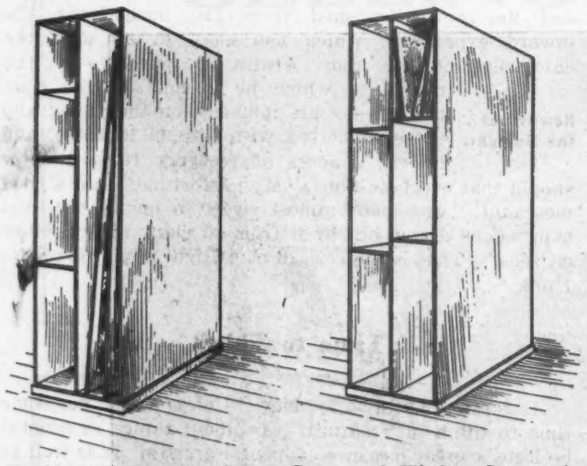
THE New England Hardware Dealers' Association will hold its annual outing at Nantasket Beach, Boston Harbor, Wednesday, July 28. The committee in charge consists of F. Alexander Chandler, Boston, chairman; F. E. Peirson, Pittsfield, Mass.; F. E. Stacy, Springfield, Mass.; J. B. Hunter, D. Fletcher Barber and H. M. Sanders, Boston; H. L. Russell, Holyoke, Mass., and C. L. Underhill, Somerville, Mass. A joint committee, including jobbers, is preparing an interesting programme, which will include a shore dinner, ball game and other sports and an evening at Paragon Park. O. C. Alderman, Springfield, will captain the nine of the merchants, while W. P. Ross, Standard Tool Company, Boston, will lead the team of traveling men. Mayor Sanderson of Springfield will umpire. Members of the trade are cordially invited to join in the outing.

Combination Case for Screens and Stove Boards.

A Convenient Arrangement for Use All the Year Round.

THE accompanying illustrations represent an arrangement which can be transformed by shelves sliding in grooves, from a stove board case in winter, as shown at the right, to a screen case in summer, as shown at the left. The shelves are made of heavy sheet iron turned down on the front edge to stiffen them and prevent bending under the weight of the goods. The case may be stiffened by rods placed under the shelves, passing from the outside boards through the partition board. The case is 8 ft. high by 12 in. to each division, making it 26 in. wide and 3 ft. deep, so that it does not take up much floor space in the store.

To accommodate Stove Boards the openings on the left hand side take Boards, from the top down, 26 x 26,



Combination Case for Screen Doors and Window Screens in Summer and Stove Boards in Winter.

30 x 30 and 33 x 33, each opening being 2 or 3 in. longer than the Boards, the hights being 28, 32 and 36 in., respectively. The right hand division accommodates Boards 24 x 24, 28 x 28 and 36 x 36, the hights of the openings being 26, 31 and 39 in.

For Window Screens grooves are provided, so that the shelves make openings, from top down, 17, 20, 26 and 33 in. high. The large space is designed only for sample Screen Doors, the stock being kept elsewhere in the store. It is obvious that the hight of the openings can be made to suit any sizes of Window Screens and Stove Boards carried in stock. This convenient case is in use in the store of Alden & Judson, Grand Rapids, Mich., to whom we are indebted for particulars relating to it.

Russell Jennings Mfg. Company.

AT the recent annual meeting of the directors of the Russell Jennings Mfg. Company, Chester, Conn., the following officers were elected: Stephen E. Jennings, president; Arthur L. Jennings, vice-president and treasurer, and Ernest A. Jennings, secretary. A. F. Blasdell, at present superintendent of the Westinghouse Machine Works, Pittsburgh, Pa., has been engaged as superintendent, and will take charge of the factories. He is expected to enter upon his duties about August 1. The active management of the business is now placed in the hands of the treasurer, Arthur L. Jennings, a son of the late Simeon H. Jennings, who for many years was president and treasurer of the company. W. A. Brothwell, the retiring treasurer of the company, has been connected with the concern since 1885. In 1896 Mr. Brothwell succeeded Simeon H. Jennings as treasurer. Stephen E. Jennings, who has again been elected president, has held this office for several years. He became connected with the business soon after its establishment. The company is planning for the installation of new equipment and is making some changes in office and shop management in order to increase the capacity of the plant and put the concern in better condition to meet the wants of its customers.

Correspondence.

A Hardware Manufacturer's Experience in Putting Goods on the Market.

To the Editor: The letter of "Old Manufacturer," in your issue of July 8, hits the experience of at least one other manufacturer very closely.

We have been reading *The Iron Age* for 35 years, and we must confess that we grow a little weary of the incessant repetition of the tirades of some speakers in the State conventions who feel it incumbent upon them to take a whack at the catalogue houses or the parcel post proposition in order to make Hardwaremen think that they are being very greatly abused. We believe that if more attention was given to encouraging merchants to meet this competition and to exerting themselves to sell the goods which are in the market a real and permanent service would be rendered to merchants. Our sympathies are with the Hardwareman, whether jobber or retailer, for we have had 40 years of strenuous experience in both lines of trade.

We are making a variety of goods for the Hardware trade, some of which are bought by the jobbers only and some by both catalogue houses and jobbers. The difference in experience which we have in dealing with the two classes of trade would furnish an instructive commentary upon the different ways of doing business. Whenever we sell a large jobbing house two or three dozen of a certain machine in the course of a year, and during that time receive a series of complaints that this dealer and that one cannot understand our machine or else cannot make it work, we come to think that perhaps our product is not really marketable. When, upon the other hand, we visit once a year one of the largest catalogue houses in the country for the purpose of arranging the next year's business, and are told by them voluntarily that one great reason they like our goods is because they have less than 1 per cent. of complaints from all sources in regard to the work of the machines, and when such a house gives us an order for the next year's business amounting to more than the combined trade of the jobbers together, and also when we look over our account and find that at the end of the year's business their payments have fully met the conditions of cash in 10 days, and that our jobbing friends have wanted to take off their discount at the end of from 20 to 30 days, we cannot help but be impressed with the feeling that something is wrong.

Jobbers versus Catalogue Houses.

"Old Manufacturer" has found the real trouble of the situation. The merchants are trying to sell such goods as are in constant demand and sell easily. Without question the average Hardware salesmen sent out upon the road carry so great a variety of goods that they very quickly drop into the habit of trying to sell the goods only which sell themselves. It is to-day no assurance to us that we are going to increase our sales to any perceptible extent by getting them into the catalogue of some large jobbing house. If we get one of our machines into the catalogue of ——— or some of the other mail order houses it is an assurance to us that we can depend upon a market the first year in the ordinary way for at least 100 of our machines.

Goods Which Sell Easily.

These are the stubborn facts which an old Hardware man ran against when he bought an interest in a manufacturing concern.

The moral of all this which we would try to whisper in every Hardware man's ear would be to quit fighting the catalogue houses and go to work and see what he can do to improve his own business methods.

ANOTHER MANUFACTURER.

A Cheery Spirit.

If, in the paths of the world,
Stones might have wounded thy feet,
Toil or dejection have tried
Thy spirit, of that we saw
Nothing—to us thou wast still
Cheerful, and helpful, and firm!
—*To His Father, by Matthew Arnold.*

The Delivery Boy.

Many merchants are prone to give very little consideration to the selection of a delivery boy; but this is decidedly a mistake. The right kind of a delivery boy has many times been able to hold the trade of a customer in spite of defects in goods and prices and in the service rendered by the proprietor and his clerks. The delivery boy who is a natural hustler is a tower of strength in the organization of any store, and the merchant who does not recognize this fact is overlooking an essential point. The storekeeper should not forget the fact that the delivery boy is the person who closes the transaction and who goes into the homes of his customers to do so. He is, so to speak, the living link between the store and the home. In many cases much of the buying is done by servants, and it is the delivery boy who comes into daily contact with the maid of the house. If this work is done in a prompt, intelligent and agreeable manner he gets a personal standing in the homes at which he calls, and not infrequently brings out the remark: "They may be a little slow at the store, but that boy is all right, and can be depended upon to get the things around in time and in good shape."

A Tower of Strength.

Perhaps some may feel that I place too much importance upon the delivery boy, but he is a factor in community trade which has received altogether too little consideration—and, perhaps, he also generally receives too little compensation. Certainly there is no kindergarten for the merchandising business equal to the delivery wagon, and the boy who makes a success in that humble capacity is the best possible timber out of which to make a clerk or proprietor.—*H. N. Higinbotham.*

Delivery Wagon as Kindergarten.

The Merchant's Aim.

The aim makes the man—the spirit, the energy, the greatness or bitterness of the character and life. When the merchant's aim is right he will have something that shall survive defeat and glorify even poverty; and when accumulating prosperity is his, it shall not undermine his principles nor make him insensible to the uses of wealth.

A short time since two merchants in the same line of business were conversing on the method to be adopted to make a fortune. The one remarked, "I have been working 15 years to establish a quality of goods and to fix a reputation, and I shall hold to the reputation I have gained and shall carefully keep up the quality of my wares."

Making a Fortune.

"Pooh!" answered the other, "I shall do no such thing. I'm not a-going to work as long as that, but am determined to make a fortune in a few years and let the reputation go."

Here are the representatives of the two classes in the mercantile community; the one to whom character and conscience are unspeakable wealth, the other to whom they are nothing.

It is easy to go through the histories of our prominent merchants and see the wisdom of the one class and folly of the other; for the aim of the man is not something he can always keep covered up and out of sight. It will gleam out to shame or dignify; and shrewd business men soon discover on what principle trade is conducted by those with whom they are brought in contact. They are repelled by the discernment of the low and mean aim, as they are attracted by the noble and generous spirit of the true merchant. Hence, though now and then to test man's regard for lofty principle, some flashy adventurer may amass a fortune speedily, yet the greater amount of success will be found, as it is found in the department of science and discovery, with the men of generous purposes, dignifying aims, cautious and unpresuming, addressing themselves to what is right as well as what promises immediate success.

Wisdom and Folly.

A man who goes on the policy of deception and cheating begins by deceiving and cheating himself; and he is distinguished from the upright by the inward experience, which has more to do with the enjoyment of life than wealth or poverty—by the regard in which he is held in the community—by his influence on the young and those connected with him in business, and by the chances of recovery from disaster should that overtake him. "My misfortune," said a good merchant, "was made almost sweet to me by the kind expressions drawn out by it from so many of my fellow citizens." That is the reward of a Right Aim.—*Freeman Hunt.*

Reward of the Upright.

Time to Think.

It doesn't pay to be too busy. Unless a man has some time to think in a natural way about things in general he loses a great measure of mental growth. It is well to be active—a wholesome thing for every faculty of the mind. But as trees and flowers need both periods of rain and periods of sunshine, so men need to be sometimes busy and sometimes able to stop and think. Quiet thought is refreshing to the busy man.

A great many men in business do not at all appreciate this fact, however commonplace it may seem. They drive themselves or let themselves be driven by their work all day long, day in and day out, year in and year out. What time they have away from their work is often spent in an endless round of social and pleasurable activities, leaving practically no half hour without its impending purpose, no time to stop and think and set their minds in order, no time to reflect or to let the mind act from impulses other than the purposes with which it is being driven continuously. Such a man's mind gets into a whirl, revolving in a very small orbit, and making him oblivious to greater themes that lie wholly outside of the limited circle of his own strenuous activity.

Mind in a Whirl.

On a strictly business basis, this does not pay. It deprives the man of thoughts and ideas that might open up new opportunities of immeasurable value to his work. Whatever clogs up thinking retards progress.—*W. P. Warren.*

JOHN J. SINZICH, Chicago, representative of the George H. Bishop Company, Lawrenceburg, Ind., died at his home, in that city, on the 11th inst. Mr. Sinzich was born in Evansville, Ind., 70 years ago.

HOWELL GANO, one of the oldest Hardware merchants in the country, died on the 11th inst., at his home in Clifton, Ohio. Mr. Gano was 87 years old, and until six years ago had been actively engaged in the Hardware business which he established more than half a century ago on Walnut street, Cincinnati. Mr. Gano leaves six children.

Recent Judicial Decisions of Interest to Merchants.

BY A. L. H. STREET.

Railroads—Failure to Receive Freight—Excuses.—A North Carolina statute requires every railroad to receive all articles for transportation whenever tendered, and inflicts a penalty of $50 for each day it refuses to receive freight. Another provision imposes a penalty for refusing to transport freight within a reasonable time and requires shipments to start from the initial point within two days after the freight is received. Held that a railroad company can plead any legal excuse to avoid a penalty for failing to receive freight, and that if it was unable to transport a shipment because its motive power was tied up by a strike it would not be liable for the statutory penalty for refusing to receive it. [North Carolina Supreme Court, Murphy Hardware Company *vs.* Southern Railway Company, 64 Southeastern Reporter 873.]

Railroads—Delivery of Freight.—The duty of a railroad company to deliver freight to the proper party is absolute. The owner of freight may not, because of delay in delivery, refuse to receive it and sue the railroad company for the value of the goods, though he has been obliged to buy other like goods, but he should accept it and sue for the damages. Refusal of the owner to accept freight because of the company's delay in transportation does not discharge the railroad company from liability for the goods, but it should safely store them and so be able to keep its tender good; and having, instead, disposed of and so converted them, it is liable for their value. [Supreme Court of Arkansas, Chicago, Rock Island & Pacific Railway Company *vs.* Albert Pheipher & Brother, 119 Southwestern Reporter 642.]

Sales—Agency—Fraud.—Plaintiff, who dealt with defendant, the agent of C., sold goods, thinking he was selling to C., as he was, and relying on C.'s responsibility and shipping the goods to C.'s place of business, cannot hold defendant as principal, because he thought defendant was C. In order to sustain an action for fraud, where defendant, in purchasing goods of plaintiff for C., misrepresented that he was C., plaintiff must show that the misrepresentation was material and that he was injured thereby. [New York Supreme Court, Appellate Term, Turchin Sheffield Plate & Sterling Silver Company *vs.* Baugh, 117 New York Supplement 137.]

Fire Insurance.—A policy delivered to a mortgagee with the consent of the insured becomes effective, at least from the time of the acceptance of the application for insurance. A mere option contract for the sale of insured property, under which nothing is done before loss, is not within a condition against change of title. If no policy has in fact been issued to the insured, the case will be considered as if a policy in the usual form had in fact been issued. Knowledge on the part of the insurer's agent of the future intentions of the insured to violate a condition of the policy by giving a mortgage on the property is not binding upon the insurer and cannot be relied upon for the purpose of avoiding the condition A soliciting agent of an insurance company has no authority to waive any of the conditions of the policy as written. [Supreme Court of Iowa, House *vs.* Security Fire Insurance Company, 121 Northwestern Reporter 508.]

Leases of Buildings—Constructive Eviction.—New York Real Property Law (Laws 1896, page 589, Chapter 547, page 589), Section 197, which permits a tenant to surrender possession and release himself from rent where the building is so injured by the elements or any other cause as to be untenantable, has nothing to do with the law of eviction, but only changes the common law rule by giving a tenant the right to quit and does not relieve him from the payment of rent because of a frozen water pipe bursting, on the theory of constructive eviction. The bursting of a frozen water pipe and refusal by the landlord to repair, as required by a lease, is not a constructive eviction, relieving the tenant from the duty to pay rent.. Unless expressly made so, the keeping of a covenant by the landlord to repair is not a condition to the payment of rent. New York Real Property Law (Laws 1896, page 592, chapter 547), Section 207, which requires a surrender of a lease for more than one year to be in writing, signed by the tenant, does not apply where there is an actual surrender and acceptance. A breach of covenant by a landlord to make inside repairs, including plumbing, does not entitle the tenants to damages for injury to their goods caused by the bursting of a frozen water pipe, where they are at fault. [New York Supreme Court, Appellate Division, Second Department, Baldwin *vs.* Cohen, 116 New York Supplement 510.]

Leases of Store Rooms—Rent—Eviction.—In an action to recover rent the admission by defendant that he was the lessee of plaintiff and had not paid the matured rent demanded cast on him the burden of excusing his apparent default by proof of a breach of the contract by plaintiff pleaded in defendant's answer. The defense that defendant had been evicted by being deprived of the use of part of the premises was not sustained merely by a showing that on attempting to show the premises to a prospective subtenant he found the door of a stairway which was held in common with an adjoining owner locked, it appearing that the door had been locked by defendant's former subtenant and the refusal of the adjoining owner to unlock the door being due to the incivility of the demand. [Kansas City Court of Appeals, Pearce *vs.* Hoyt, 118 S. W. Rep. 656.]

Leases of Store Rooms—Holding Over.—Where under a lease for a term of years, with reservation of monthly rent and stipulation that the tenancy shall not be by the year, the tenant holds over after the year, merely making payment of the monthly rent, which the landlord accepts, the renewal of the tenancy thereby implied is by the month only, not by the year, nor for the original term. [West Virginia Supreme Court of Appeals, White *vs.* Sohn, 64 S. E. Rep. 442.]

Obstruction of Sidewalks—Moving Merchandise.—Whether the use of skids to convey merchandise to and from a store building which obstructs a sidewalk is reasonable is a question of fact and not of law. It was agreed in an action by a merchant to restrain a city from interfering with the use of skids to convey merchandise to and from a building over a sidewalk that the use of skids obviated the necessity of placing merchandise on the sidewalk and enabled the merchant to remove it in from one-half to one-tenth of the time otherwise required; that there was no other method by which it could be removed with less obstruction; that unless the use of skids or other mechanical appliance be permitted it would be impossible for the merchant to move to and from his building the bulky packages in which he deals and that he could not successfully prosecute his business and that the skids are used only when reasonably necessary in the conduct of the business. Held that these facts entitle plaintiff to an injunction restraining interference with reasonable use of the skids. The Illinois statute which declares it to be a nuisance to obstruct or encroach upon public highways and the statute which gives City Councils power to prevent and remove encroachments on streets do not render the use of skids in moving merchandise over a sidewalk to and from a building a nuisance so as to entitle the city to abate the use. [Illinois Supreme Court, John A. Tolman & Co., *vs.* City of Chicago, 88 Northeastern Reporter 488.]

Limited Partnerships—Liabilities.—The law governing corporations and not that applicable to partnerships applies to limited partnerships. The statute regulating limited partnerships provides that no debt shall be contracted except by one or more managers, and no liability for an amount exceeding $500 shall bind the association unless reduced to writing and signed by at least two managers, except in the case of merchandising associations, in which a majority may select one manager each year to purchase merchandise, make contracts and sign notes, provides the power be given in writing, signed by a majority of the members. A., acting as manager of a limited merchandising partnership, and though no written authority was ever given him as required for three and one-half years, he was permitted by his fellow managers to exercise the authority prescribed, and from February, 1902, until October, 1903, hundreds of notes signed by him or at his direction by one manager only for merchandise and for accommodation were issued. He also acted alone in habitually purchasing goods under contracts exceeding $500 in value, and his acts were always acknowledged by the association until its insolvency, all of the managers and part of the stockholders having knowledge of the course of business pursued. Held that such notes, whether executed for merchandise or for accommodation, were valid claims against the partnership in insolvency, in the hands of bona fide purchasers for value. [Michigan Supreme Court, Armstrong *vs.* Stearns, 121 Northwestern Reporter 312.]

Dissolution of Partnership—Necessity for Notice.—A partner, who though an inactive was not a secret partner and so not a dormant partner, was not relieved of the necessity of giving notice of retirement to escape liability for goods sold to the firm, continued in its old name after his retirement, by a person who had previously dealt with the firm, though he did not know who were the partners. [New York Supreme Court, Appellate Term, Griggs & Co. *vs.* Levy, 117 New York Supplement 116.]

Rights and Liabilities of Partners.—A partner who merely consented to a sale by the copartner of his half of the firm stock and thereby consented to the substitution of the

buyer as copartner, did not thereby assume the debts of the old firm, nor waive his right to have the existing indebtedness satisfied from the firm property and on discharging the debts did not incur any liability to the buyer or one claiming under him. A buyer of a partner's interest in a firm and thereby succeeding as a member of the firm does not thereby assume outstanding debts. Neither partner separately owns or has the exclusive right to possession of any particular article of firm property or part thereof, but the real ownership and legal title are vested in the firm, so that a sale by a partner of a half of the stock does not pass title to the stock itself, but only such as remains after the settlement of the firm debts and accounts. The deposit of a deed to a partner for his interest in a firm, to be held by the depository until the firm debts are paid, operates to hold in abeyance a delivery of the deed, and practically the only remedy of the grantor in the event of nonpayment of the firm debts is the withholding of title to the land, for the mere deposit of the deed furnishes no security for anything the grantor may be called on to pay, or which might be taken from the assets of the firm. The depositing of title deeds does not create an equitable lien or mortgage. [Supreme Court of Iowa, Tuller *vs.* Leaverton, 121 Northwestern Reporter 515.]

Partnership—Accounting—Firm Liabilities.—Where a partner improperly lent firm money without his partner's knowledge, giving a check for the amount, and received the borrower's note, which he gave to another in part payment of the firm's debt and the note was paid to the other by the borrower, the transaction being without loss to the other partner, the check was a firm obligation notwithstanding the improper character of the loan. Checks drawn by a partner in charge of the firm business to pay for coal bought after the firm had ceased to do a trading business were firm obligations, where the purchase was a firm transaction, agreed to by the other partner. Where a partner, who had control of the financial part of the firm's business, was in the habit of drawing checks upon firm funds for the use of himself, family and others, without the knowledge of his partner, and subsequently refunding the money, he was personally liable for amounts the repayment of which he could prove only by his own evidence as to his general course of conduct during the transactions, which extended over a number of years, to repay to the firm all money thus withdrawn. [Rhode Island Supreme Court, Holden *vs.* Thurber, 72 Atl. Rep. 720.]

Michigan Hardware Convention.

THE programme for the fifteenth annual convention of the Michigan Retail Hardware Association, A. J. Scott secretary, Marine City, at Saginaw, August 11, 12 and 13, has been largely determined upon, although a few minor details are still to be settled. As already noted, the meeting will be held in the Auditorium, which will also be the scene of the Hardware exhibition, the first of its kind in connection with the annual convention of the association, and which promises to be unusually successful. Members of the association and traveling men representing jobbers and manufacturers are talking up the convention, and an especially large attendance is looked for.

On Wednesday morning, 11th inst., the Hardware exhibition will be officially opened, and in the afternoon the first session of the convention will be held. This will be the policy during the gathering, the forenoons being given up to the inspection of the exhibits and the afternoons to the business sessions. Among the formal addresses during the convention will be those by F. N. Whitbeck, Millburg, Mich., on "Nails and Tacks"; by W. P. Bogardus, Mt. Vernon, Ohio, ex-president of the National Retail Hardware Association, whose subject will be "Cui Bono"; by Henry Stadt, Grand Rapids, Mich., on "The Cash System and Its Merit," and by Edward F. Trefz of the Sheldon School of Scientific Salesmanship on "Salesmanship."

Thursday afternoon the members of the association will spend an hour with the traveling men in a discussion of topics of mutual interest, which will be led by W. B. Wood of Detroit. Mutual fire insurance will also come up for treatment in informal remarks by representatives of a number of the Hardware mutual companies. Charles H. Williams, Streator, Ill., president of the National Retail Hardware Association, has been invited to attend the convention, and will make an address in which the work and aims of the national body will be touched on. Time has also been set aside at each session for the discussion of topics coming up through the Question Box. In the way of amusement there will be a trolley ride and entertainment at Riverside Park on Wednesday evening and a luncheon at Arbeiter Hall on Thursday evening.

Indianapolis Drop Forging Company.

ANNOUNCEMENT is made that the Central Trust Company and Henry J. Martin, receivers for the Indianapolis Drop Forging Company, Indianapolis, Ind., on the 3d inst. restored the control of the corporation to its officers and stockholders. This company was placed in the hands of receivers in 1904, but within a few months all the creditors were paid in full, money having been borrowed on receivers' certificates for this purpose. These certificates have now been retired and the company has been restored to the old stockholders as above noted. The business continues under the supervision of Ferd. Barnickol, vice-president and general manager, who has been identified with it from its organization. New equipment is being installed, and arrangements are under way for running on double shift, which has become necessary in view of the large amount of business recently accumulated and the excellent prospects for the future.

Carborundum Four-Drawer Display Case.

THE Carborundum Company, Niagara Falls, N. Y., manufacturing abrasive materials, is furnishing to merchants a Four-Drawer Display Case, done in natural wood colors, about 14 in. square and 7 in. high. The drawers are built into the body of the Case, and each drawer is fitted with a strong pull. The lift top cover shows the Carborundum Indian Head trademark decorated in five colors. When the Case is closed and placed on a store shelf it still has value as a display medium, as attached to it is a drop front, which, when the case is closed, is lifted so as to cover the four drawers and fastened to the top cover. Across the outside of the drop front are the words, "Carborundum Sharpening Stones," in gilt letters, which are seen by customers when the case is closed. Merchants purchasing a stock of the Stones can obtain the Cases free of charge.

Carborundum Four-Drawer Display Case for Merchants' Use.

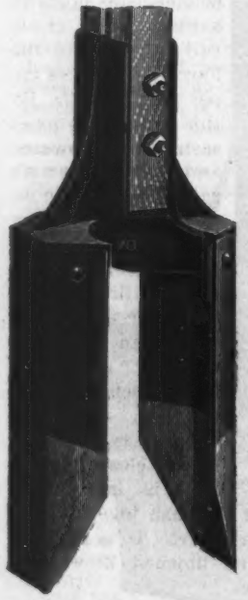
THE INDEPENDENT HARDWARE & LUMBER COMPANY, Durango, Colo., has recently suffered from two serious fires. On May 15 two warehouses, each 100 x 30 ft., containing plumbing, sheet metal and woodworking departments, with tools and stock, also Sash Doors, Implements, Vehicles, Boxes, machine repairs, &c., were destroyed, the loss being $20,000, with insurance of $6500. The latter was paid promptly, including that portion placed with the Hardware mutuals, amounting to about

40 per cent. of the total. On the 9th inst. another fire occurred inflicting a loss of about $12,000, on which there was insurance, which has not yet been adjusted, of about $6000. The latter fire consumed three large warehouses, two lumber sheds and barn, including the entire stock contained in them. Both fires are believed to have been of incendiary origin, and insufficient water supply coupled with the strong wind prevailing made the loss a heavy one in each case. While the company has thus suffered severely, with characteristic courage and enterprise it is still prosecuting its retail Hardware business with a little lumber and has already ordered stock to replace the goods destroyed.

Brush Set in Natural Ebony.

The United Brush Manufactories, 21 Park place, New York, has just brought out a new set of solid ebony handle brushes. It consists of a detachable long curved handle bath brush, clothes brush with "dirter" attached (the latter being distinctively English, having short stiff bristles on end of back with which to better rub out mud spots), hat brush, complexion brush and nail scrub, all having bristles of the best white foreign stock. A marked peculiarity of the set is the ebony itself, finished natural in oil, which adds greatly to the enduring qualities and life of the set. The natural finish brings out richly the beautiful grain of this species of ebony, of which there are a number, especially the dark green effect in contrast with the lighter shades of a portion.

Hexagon Post Hole Digger.



Hexagon Post Hole Digger, with Handles Which Pull Against Iron Frame Instead of Against the Bolts.

A feature of the post hole digger made by the Eureka Digger Company, 142-148 East Huron street, Chicago, Ill., is that the arrangement to prevent handles breaking brings the pull against the iron frame instead of against the bolts. It is stated that the blades can be thrown to a reverse angle of 45 degrees to release the dirt and that the handles are so placed that they only open a little to close the blades, thus allowing the operator to dig a deep hole and still maintain a uniform size. The blade is 9 in. long and the digger 4 ft. 10 in. long, weighing 120 lb. to the dozen. Four are tied in a bundle for shipping.

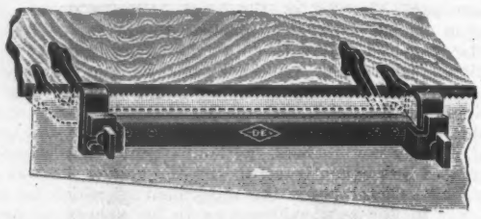
THE Washington Hardware and Implement Dealers' Mutual Fire Insurance Association, E. W. Evenson, secretary, Spokane, has issued a statement of its condition on June 30, from which it appears that the insurance in force, which on December 31 last amounted to $1,062,234.15, increased in the six months to $1,282,091.59. The assets amount to $20,022.41, with a balance, representing excess of income over expenses, of $8532.04. The return premium during the present year amounts to 33 1-3 per cent.

The Royal Three-Barrel Gun.

The Royal Gun Company, Wheeling, W. Va., manufactures a line of three barrel guns, the two top barrels being for shot and the lower one for bullets. One of the features of the gun is ease of operation, the mechanism of the locks being such that the shot barrels and rifle may be fired in quick succession or either may be fired at will independently. All grades of the gun are referred to as beautifully designed, durably constructed, handsomely engraved and perfectly balanced.

The Diamond Edge Saw Clamp.

The Norvell-Shapleigh Hardware Company, St. Louis, Mo., is offering a steel saw clamp, which is compact and can be easily and quickly attached to a work-bench, sawhorse, &c. For this purpose the clamp is provided with a lower lug hook at each end, and driven firmly into the front of the bench. The clamp also has two dogs with prongs, one at each end, and the prongs are driven into the top of the bench. With ordinary care, it is explained, the clamp will then be as solid as a vise. When inserting a saw for filing, attention is paid to only one end of the blade, which is fastened when the other end is drawn



The Diamond Edge Saw Clamp, All Steel.

into position. Thus the teeth are brought to the right level, and opening and closing the clamp repeatedly is avoided. It is unnecessary to take the saw out of the clamp to shift it, as by opening the bars the saw may be moved to the desired position. It is pointed out that by means of the two steel set screws a rigid vise is obtained and that consequently the saw will not chatter. The clamp, it is shown, takes up a comparatively small space. They are furnished in two finishes, dull nickel plated and plain, and are packed one-quarter dozen in a neat display box, attractively labeled.

Paragon Flat Taper Shank Drills and Sockets.

The Cleveland Twist Drill Company, Cleveland, Ohio, has put on the market the Paragon flat taper shank high speed drills and Paragon sockets. The drill is twisted from flat stock with a shank forged and ground to size from the original bar, without weld or joint. This shank has a uniform taper on the flat sides as well as on the rounded edges. The unique and practical feature of the shank is in its strength and simplicity, which the company refers to as the natural, logical method of driving a flat twisted drill. A regular taper shank sleeve outside, with a flat tapered hole inside to correspond to the shank, is all that is required to hold the drill. A true fit is thus secured, resulting in a firm, accurate

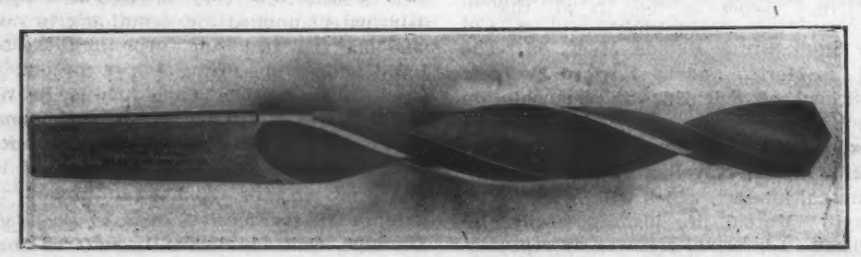


Fig. 1.—Paragon Flat Taper Shank High Speed Twist Drill.

drive with the strain distributed over the entire length of the shank, leaving no weak point to break or twist off.

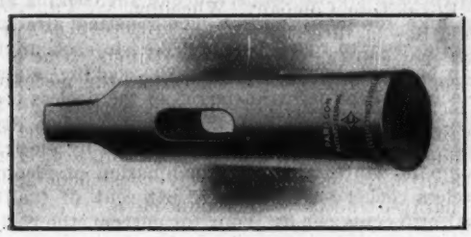


Fig. 2.—Paragon Socket to Hold the Drill.

The sockets are simple and inexpensive and are furnished in either rough, fitted or sleeve style.

Automatic Roller Window Screen.

The accompanying illustration, Fig. 1, presents a view from the outside of the application of an automatic roller window screen, manufactured by the Automatic Screen Company, Ohio Building, Toledo, Ohio. The screens are made entirely of metal to prevent shrinking, swelling, warping or other distortion, so that they

Fig. 1.—Automatic Roller Window Made Entirely of Metal.

will always fit, and may be used on old or new buildings. It is unnecessary to cut window frame or sash for installation, and they work equally well on upper or lower sash, or both. By the use of an ordinary table knife, or other thin metal strip, the screen may be disengaged from the sash, and when the sash is closed the screen automatically engages itself and is ready for use. The point is made by the manufacturer that the space that is open, whether inches or feet, is all that is screened, so that there is no screen before the glass to

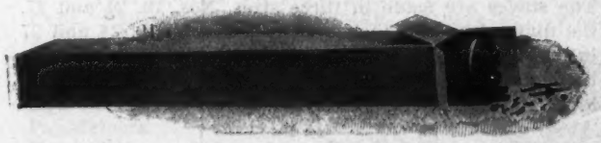


Fig. 2.—Paper Carton, 3⅛ In. Square, Containing Automatic Roller Window Screen.

obstruct the view or gather dust. The screen roll is not seen from the interior of the room, as it is completely hidden from view by the lower part of the sash. The screens are packed one in a heavy paper carton, 3⅛ in. square, as shown in Fig. 2, making a convenient package to handle and compact for shipping. It is remarked that in a house a dozen or more automatic screens may be stored in the space required for one frame screen, and that the roller screen costs no more than the stationary style. The screens are designed for residences, hotels, flats, clubs, schools, factories and public buildings.

The Security Window Fastener.

The sash lock illustrated in Fig. 1 is designed to lock the upper and lower sash together in various positions, and is made by the Hillyard Mfg. Company, St. Joseph,

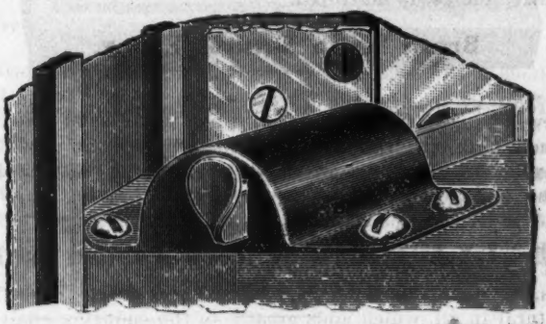


Fig. 1.—The Security Window Fastener on Top of Lower Sash.

Mo., which describes it as very strong and durable and easily attached or detached without mortising or marring the sash. The fastener is screwed on the top of the lower sash at the edge of the glass, and the hook point of the sliding bolt engages holes in a flat metal check rail attached to the lower part of the upper sash, Fig. 2. By this means the upper sash may be lowered and the top sash raised, both being securely locked in any position within range of the perforated check rail. Similarly, either one or the other can be separately locked in either open or closed position; or both sashes may be locked when closed. The lock is inaccessible from the outside, and by drawing the sash together prevents rattling and excludes dust and dirt. It is made of bright cold rolled sheet steel and finished in antique copper, old copper and dull brass.

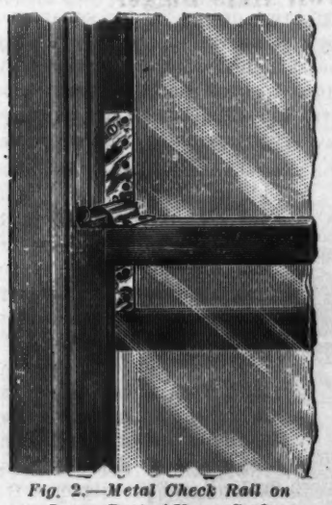
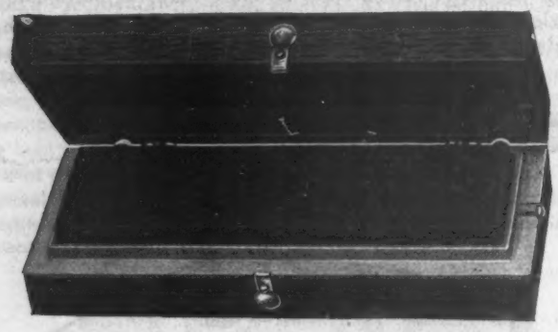


Fig. 2.—Metal Check Rail on Lower Part of Upper Sash.

Pike's Reversible Oil Stone Box.

The Pike Mfg. Company, Pike, N. H., and 151 Chambers street, New York, offers Pike's reversible oilstone box, patent applied for, containing two oilstones, coarse and fine grit, in a single mounting, the combined sharpening stones measuring 7 x 1 x 2 in. Regularly the combination consists of one Lily White Washita and one India stone of different grits, each approximately 7 x 2 x ⅝ in., cemented together and held rigidly in a cast aluminum frame by three round head machine screws to permit instant replacing if broken or injured. An alternative set consists of a coarse and fine India in combination, obtainable if so ordered. The box, of hard wood, finished in a mission green, is 8 x 3 x 1⅞ in. outer dimensions, and both covers have felt pads, a rich red, to protect the stones from dust and dirt and keep each properly oil moistened. While equally serviceable in shop or portable kit, this combination is particularly convenient for carpenters and mechanics out on jobs and for home use, as two sharpening stones are always

instantly available in the compass of one. This enables the user to greatly economize time by using the coarse



Pike's Reversible Oil Stone Box, Two Grades of Grit, with Two Covers.

side to quickly fit the tool for the keener edge produced by the finer grit.

The I-X-L Electric Kitchen Cabinet with Fireless Cooker.

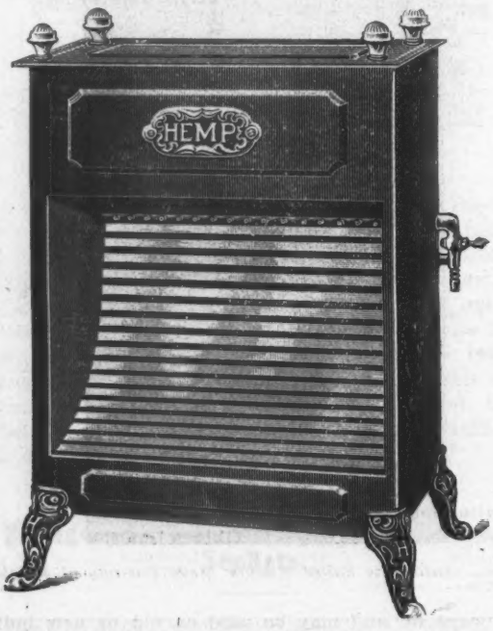
The I-X-L Furniture Company, Goshen, Ind., is manufacturing the Electric kitchen cabinet with fireless cooker. It is of oak, golden oak finish, with white enameled interior top, stained base doors and antique copper hardware. The cabinet contains a large flour bin with sifter, large cupboard with two shelves and art glass doors, small cupboard with panel door, two drop bins for sugar and salt, card rack and sugar scoop in top, fireless cooker with two compartments and utensils, large cupboard with sliding shelf and galvanized sheet metal bottom, spice cans, racks on doors, large kneading board, two drawers and nicolene top on base. The cooking appliances in the

The I-X-L Electric Kitchen Cabinet with Fireless Cooker.

cabinet employ electricity to generate heat. The electric equipment consists of 4 three-heat switches, 2 two-heat switches and 1 three-heat snap switch for oven; all the necessary fuse blocks and fuses, tight and loose pulleys for cord transmission and wiring complete with heat plugs to correspond with the switches; also receptacles for pilot light and lamps, equipped for the following utensils; 2-quart cereal cooker, 4-quart tea kettle, coffee percolator, 10-inch frying pan, broiler, grid, oven and 4-quart combination cooker, chafing dish and 10-inch 3-heat stove. The fireless cooker, which is contained in the large drawer shown pulled out in the illustration, is so constructed that the temperature of the cooking article is kept high for many hours. The roasting attachment enables the user to roast, boil or bake; to cook anything that can be started in the stove. The cooking is started with electrical heat and transferred to the fireless cooker, which completes it without danger of boiling dry or burning, or the entire meal can be cooked by electricity. The company states that the combination of electricity and fireless cooker saves 50 to 75 per cent. of fuel bills, and that at 5 cents per kw.-hour for current, the cost will average less than 1 cent per person per meal with an average of five persons in family. Fireless cookers may be obtained separate from the cabinet, with 1, 2, or 3 compartments.

The Hemp Gas Heating Stove.

The reflector gas heater, here illustrated, is referred to by the manufacturers, Hemp & Co., St. Louis, Mo., as a cleanly, inexpensive and effective means of heating homes and offices. The body of the stove is made of sheet steel, with Russia finish, and the reflectors are formed of 10-oz. highly polished corrugated copper sheets. The stove is ornamented with paneled front and top and nickeled plated trimmings. The valve connections have combination hose end and threaded nipples. The reflector will burn a 5-in. flame with a ½-oz. gas pressure and emits a bright illuminating ray, which reflects the



The Hemp Gas Heating Stove with Reflector of Pure Highly Polished Copper.

fullest measure of heat from the copper reflector. Its action is instantaneous in that available heat is produced as soon as the gas is lighted. The steel burners are fitted with special German lava tips, and it is recommended that, since the highest percentage of heat is obtained from an illuminating flame, the gas should never be turned on strong enough to produce a blue flame. The stoves are made in three sizes, Nos. 19, 24 and 27, the dimensions of which are, respectively, 19, 24 and 27 in. in hight, 19, 14 and 22 in. in width and 9½ and 11 in. in depth. The shipping weights of the three sizes are 8, 12 and 25 lb., respectively.

Stevens Six Shot Repeating Shotgun No. 520.

A new shotgun put on the market by the J. Stevens Arms & Tool Company, Chicopee Falls, Mass., and designed by John Browning, has a barrel of compressed forged steel, finished in black oxide. The receiver is a solid drop forging, black oxide finish. In manipulating the gun none of the interior protrudes, which is referred to as one of its most valuable features. The tangs to

which the stock is fitted are extra long, to add strength to the stock at its weakest point. Shells are ejected from the side, away from the shooter. The gun can be taken down and put together, it is stated, in 8 sec. The safety on the gun is inside the guard, forward of the trigger, and can be moved backward and forward without removing the finger. The slide is unlocked by the recoil immediately after the discharge of shell, and by the backward motion of the slide handle the discharged shell is drawn out of the chamber and at the same time the loaded shell starts out of the magazine onto the lifter. By this method, it is explained, the gun can be fired, without clogging, as fast as it is possible for a shooter to work the slide handle. The locking block is visible and is made of ⅛ in. square tempered steel, and when the gun is locked can be plainly seen level with top of the receiver. In opening the gun the firing pin is drawn back and locked and stays locked until the gun is closed and the locking block is in its proper position. The locking nut is so constructed that it takes up wear at the take down. When loading as a single shotgun at the trap the gun is left open after each shot and a shell is dropped into the receiver and the gun is closed when it comes the marksman's turn to shoot. The top of the receiver has been designed with a view of making an easy and accurate sighting gun. It is made in 12 gauge only, 26, 28, 30 and 32 in.; weighs 7¾ lb., and is chambered to take 2¾-in. shell.

Stevens Hammerless Six-Shot Repeating Shotgun, No. 520.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal. bbl.	lots
Linseed, Western, Raw	.60	@61
State, Raw	.60	@61
City, Raw	.61	@62
Boiled, 1¢ ℔ gal. advance on Raw.		
Raw, Calcutta, in bbls	.75	@..
Lard, Prime Winter	.90	@..
Extra No. 1	.57	@58
No. 1	.48	@50
Cotton-seed, Crude, f.o.b. mill	4.67	@4.73
Summer, Yellow, prime	5.68	@5.75
Summer, White	6	@6.10
Yellow, Winter	6.15	@6.20
Tallow, Acidless	.57	@..
Menhaden, Brown, Strained	.33	@..
Northern, Crude	.24	@..
Southern	.23	@..
Light Strained	.33	@..
Bleached Winter	.36	@..
Extra Bleached Winter	.38	@..
Cocoanut, Ceylon ℔ lb	7.60	@..
Cochin ℔ lb	7.85	@..
Cod, Domestic, Prime	.38	@..
Newfoundland	.40	@..
Red Elaine	.43	@47
Saponified ℔ lb	5¾	@ 6¾
Olive, Yellow	1.30	@..
Neatsfoot, Prime	.55	@56
Palm, Lagos ℔ lb	5¾	@..

Mineral Oils—

	℔ gal.	
Black, 29 gravity, 25@30 cold test	12½	@13
29 gravity, 15 cold test	.13	@13½
Summer	.12	@12½
Cylinder, light filtered	.20	@20½
Dark, filtered	17½	@18
Paraffine, 903-907 sp. gravity	.14	@14½
903 sp. gravity	.13	@13½
883 sp. gravity	10½	@11
Red	.13	@13½

Miscellaneous—

Barytes:		
White, Foreign ℔ ton	$18.50	@20.50
Amer., floated ℔ ton	17.00	@18.00
Off color ℔ ton	12.50	@15.00
Chalk in bulk ℔ ton	3.00	@ 3.50
China Clay, Imported ℔ ton	11.50	@18.00
Cobalt, Oxide ℔ 100 lb	1.45	@ 2.60
Whiting, Commercial ℔ 100 lb	45	@50
Gilders ℔ 100 lb	.52	@ .64
Ex. Gilders ℔ 100 lb	.56	@ .68

Putty, Commercial—℔ 100 lb

In bladders	$1.70@2.00
In bbls. or tubs, 100 lb	1.20@1.45
In 1 lb to 5 lb tins	2.65@3.25
In 12½ to 50 lb tins	1.50@1.90

Spirits Turpentine—℔ gal.

In Oil bbls	48½@49
In Machine bbls	49 @49½

Glue—

	℔ lb	
Cabinet	12	@15
Common Bone	7½	@ 9
Extra White	18	@24
Fish, liquid, 50 gal. bbls., per gallon	60	@1.20
Foot Stock, White	12	@14
Foot Stock, Brown	9	@11
German Common Hide	10	@12
German Hide	12	@18
French	10	@40
Irish	13	@16
Low Grade	10	@12
Medium White	14	@19

Gum Shellac—

	℔ lb	
Bleached, Commercial	16	@16½
Bone Dry	20	@20½
Button	29	@30
Diamond I	25	@26
Fine Orange	20	@21
A. C. Garnet	15½	@16
Light Orange	17	@19
Kala Button	10	@11
D. C	25	@26
Octagon B	22	@23
T. N	14	@15
V. S. O	23	@25

Colors in Oil—

	℔ lb	
Black, Lampblack	12	@14
Blue, Chinese	36	@46
Blue, Prussian	32	@36
Blue, Ultramarine	13	@16
Brown, Vandyke	11	@14
Green, Chrome	12	@16
Green, Paris		@24
Sienna, Raw	12	@15
Sienna, Burnt	12	@15
Umber, Raw	11	@14
Umber, Burnt	11	@14

White and Red, Lead &c.—

	℔ lb	
Lead, English white, in Oil	10½	@10¾
Lead, American White:		
Dry and in Oil, 100, 250 and 500 lb kegs	6¾	
Dry and in Oil, 25 and 50 lb kegs	7	
Dry and in Oil, 12½ lb kegs	7¼	
In Oil, 25 lb tin pails	7¼	
In Oil, 12½ lb tin pails	7¾	
In Oil, 1, 2, 3 and 5 lb tin cans, ass't	8¾	
Red Lead and Litharge:		
In 100 lb kegs	7	
In 25 and 50 lb kegs	7¼	
In 12½ lb kegs	7½	
In lots of less than 500 lbs, ½¢ ℔ lb advance over above prices of White and Red Lead and Litharge.		
Lead, American, Terms: On lots of 500 lbs and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.		

Zinc, Dry—

	℔ lb	
American, dry	5½	@ 5¾
Red Seal (French process)	6¾	@ 7
Green Seal	7¼	@ 7½
German Red Seal (French process)	7½	@ 7¾
Green Seal	7¾	@ 8
White Seal	8¾	@ 9
French, Red Seal	8¾	@ 8¾
Green Seal	10¾	@10¾

Dry Colors—

	℔ lb	
Black, Carbon	.5	@10
Black Drop, American	3½	@ 8
Black Drop, English	.5	@15
Black, Ivory	.16	@20
Lamp, commercial	.3	@ 5
Blue, Celestial	.4	@ 6
Blue, Chinese	.30	@31
Blue, Prussian, Domestic	.28	@30
Blue, Ultramarine	.5	@15
Brown, Spanish	½	@ 1
Carmine, No. 40	$2.75	@$2.85
Green, Chrome, ordinary	3½	@ 5
Green, Chrome, pure	.17	@25

Metallic Paint, ℔ ton, Brown	$16.50	@$22.00
Red	$14.00	@$18.00
Ocher, American ℔ ton	$12.00	@15.00
American Golden	4	@ 5
French	1¼	@ 2
Foreign Golden	3	@ 4
Orange Mineral, English	.10	@12
French	12¾	@13
German	.12	@13
American	8½	@10
Red, Indian, English	5	@ 7
American	3	@ 3½
Red, Turkey, English	4	@10
Red, Tuscan, English	7	@10
Red, Venetian, Amer. ℔ 100 lb	$0.75	@1.50
English ℔ 100 lb	$1.15	@1.60
Sienna, Italian, Burnt and Powdered	3	@ 9
Italian, Raw, Powdered	3	@ 7
American, Raw	2½	@ 3
American Burnt and Pow'd	2½	@ 3
Talc, French ℔ ton	$18.00	@25.00
American ℔ ton	15.00	@25.00
Terra Alba, French ℔ 100 lb	.80	@1.00
English ℔ 100 lb	.90	@1.00
American ℔ 100 lb, No. 1	.75	@ .80
American ℔ 100 lb, No. 2	.60	@ .65
Umber, T'key, Bnt. & Pow.	2½	@ 3
Turkey, Raw and Powdered	2½	@ 3
Burnt, American	2	@ 2½
Raw, American	2	@ 2½
Yellow Chrome, Pure	12¾	@13
Oxide Red, American	2	@ 7½
Vermilion, English, Imported		@70
Chinese	$0.90	@1.00

THE IRON AGE

The oldest paper in the world devoted to the interests of the Hardware, Iron, Machinery and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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Special Goods.—Quotations printed in small type (Roman) relate to goods of particular manufacturers, who request the publication of the prices named and are responsible for their correctness. They usually represent the prices to the small trade, lower prices being generally obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued annually, a book of 376 pages, which is sent free of charge to every subscriber to *The Iron Age*. It gives a classified list of the products of our advertisers and thus serves as an up-to-date DIRECTORY of the Iron, Hardware and Machinery trades.

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Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—
Columbian and Domestic....33⅓%
North's 10%
Upson's Patent, ₩ gro., $20.00....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—
Ives' Patent....10%
Ives' Stop Bead Screws and Washers 10%
Taplin's Perfection....10%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anti—Rattlers—
Fernald Mfg. Co. Burton Anti-Rattlers, ₩ doz. pairs, Nos. 1, $0.75; 2, $0.90; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ₩ doz. pairs ....$2.00@$3.00

Anvils—American—
Eagle Anvils ....₩ lb @9 ¢
Hay-Budden, Wrought....9½@9¾¢
Trenton ....₩ lb 9½@9¾¢

Imported—
Swedish Solid Steel Paragon, ₩ lb ....10@10¾¢
Swedish Solid Steel Sisco, Superior, ₩ lb....10@10¾¢
Peter Wright & Sons, ₩ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

Anvil, Vice and Drill—
Millers Falls Co., $18.00....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—
Livingston Nail Co....10%

Augers and Bits—
Com. Double Spur....50%
Jennings' Pats., Bright.65&10@70%
Black Lip or Blued...65@65&5%
Boring Mach. Augers....70%
Car Bits, 12-in. twist....40&10%
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's 35%
Forstner Pat., Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....30%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....40%
Snell's King Auger Bits....50%
Snell's Star Auger Bits....53&10%
Swan's ....65&10&7½%
Swan's, Jennings' Pattern....50%
Wright's Jennings' Bits....50%

Bit Stock Drills—See *Drills, Twist.*

Expansive Bits—
Clark's Pattern, No. 1, ₩ doz., $26; No. 2, $18....60&10%
Ford's Clark's Pattern...40&5@60&10%
C. E. Jennings & Co., Steer's Pat..25%
Lavine Pat., small size, $13.00; large size, $26.50....60&10%
Swan's 60%

Gimlet Bits—

	Per gro.
Common Dbl. Cut	*$3.00@3.85*
German Pattern, Nos. 1 to 10, $4.75; 11 to 13, $5.75	

Hollow Augers—
Bonney Pat., per doz..$5.50@6.00
Ames ....20&10%
Universal 20%

Ship Augers and Bits—
Ship Augers....40&10@—%
Ford's ....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's 6%
Wairous' ....33⅓&7½%
Snell's 60%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—
Brad Awls:
Handled....gro. $3.75@5.00
Unhdled, Shldered..gro.65@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. 31@34¢
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.00@12.00
Elmore Tool Mfg. Co.:
Tinners' and Brad Awls....55&7½%
Scratch Awls....60%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—
Single Bit, base weights: Per doz.
First Quality....$4.75@5.00
Second Quality....$4.25@4.50
Double Bit, base weights:
First Quality....$7.00@7.50
Second Quality....$6.50@6.75

Axle Grease—See *Grease, Axle.*

Axles—*Iron or Steel.*
Concord, Loose Collar...4¼@4½¢
Concord, Solid Collar....4½@5 ¢
No. 1 Common, Loose...3½@4 ¢
No. 1½ Com., New Style.4¼@4¾¢
No. 2 Solid Collar....4¼@4½¢
Half Patent:
Nos. 7, 8, 11 and 12....70%
Nos. 13 to 14....70%
Nos. 15 to 18...70&10@70&10@65%
Nos. 19 to 22...70&10@70&10@5%

Boxes, Axles—
Common and Concord, not turned....lb., 5@6¢
Common and Concord, turned, lb., 6@7¢
Half Patent....lb., 9½@10¢

Bait—Fishing—
Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

Balances—Sash—
Caldwell new list....50&10%
Pullman ....50&10%

Spring—
Light Spring Balances..60@60&5%
Chatillon's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—
Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢

Towel—
No. 10 Ideal, Nickel Plate..₩ gro. $8.50

Beams, Scale—
Scale Beams....40%
Chattillon's No. 1....30%
Chatillon's No. 2....40%

Beaters, Carpet—
Holt-Lyon Co.:
No. 12 Wire Coppered ₩ doz. $0.80; Tinned $0.85
No. 11 Wire Coppered ₩ doz. $1.15; Tinned $1.20
No. 10 Wire Tinned....₩ doz. $1.50

Beaters Egg—
Dover Stamping & Mfg. Co.:
Genuine Dover, per gro., No. 1, Tumbler Size, $7.50; No. 2, Family Size, $7.50; No. 3, Extra Family Size, $34.00; No. 4, Hotel Size, $30.00.
Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.

Bellows—
Blacksmith, Standard List:
Split Leather....60&10@65%
Grain Leather....50@50&10%

Hand—
Inch.. 6 7 8 9 10
Doz..$500 5.50 6.00 6.50 7.50

Molders—
Inch.. 10 12 14 16
Doz..$7.50 9.00 12.00 15.00

Bells—Cow—
Wrought Cow Bells....75%
Jersey ....75&10%
Texas Star....50%

Door—
Home, R. & E. Mfg. Co.'s....55&10%

Hand—
Polished, Brass....60@60&10%
White Metal....60@60&10%
Nickel Plated....50&10%
Swiss ....50&10%
Coue's Globe Hand Bells....33⅓@35%

Miscellaneous—
Farm Bells....lb., 2¼@2½¢
Church and School....60@60&10%

Belting—Leather—
First Quality, Ex. Hy., Strictly Short Lap....60&10%
Standard ....70&10@70&10&5%
Light Double....75&10%
Cut Leather Lacing....45@50%
Leather Lacing Sides, per sq. ft.25¢

Rubber—
Competition (Low Grade). 70&10@75%
Standard ....60&10@70%
Best Grades....40@50%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Green River Tire Benders and Upsetters 30%

Bicycle Goods—
John S. Leng's Son & Co.'s 1900 list: Chain, Parts, Spokes....50%
Tubes 60%

Bits—
Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks Tackle—
Common Wooden....75@75&10%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior....30%
See also Machines, Hoisting.

Boards, Stove—
Paper and Wood Lined....55%
Embossed 55%

Boards, Wash—
See *Washboards.*

Bobs, Plumb—
Keuffel & Esser Co....33⅓&10%

Bolts Carriage, Machine, &c.—
Common Carriage (cut thread):
⅝ x 6 and smaller....75&10%
Larger and longer....70&10%
Common Carriage (rolled thread):
⅝ x 6, smaller and shorter, 75&10&5%
Phila. Eagle, $3.00 list...80@—%
Bolt Ends, with C. & T. Nuts, 70&10%
Machine (Cut Thread):
⅝ x 4 and smaller....75&10&5%
Larger and longer....70&10&5%

Door and Shutter—
Cast Iron Barrel, Japanned, Round Brass Knobs:
Inch ... 3 4 5 6 8
Per doz..$0.30 .35 .45 .60 .80
Cast Iron Spring Foot, Jap'd:
Inch 6 8 10
Per doz.....$1.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:
Inch 6 8 10
Per doz.....$1.00 1.40 1.65
Cast Iron Flat Shutter, Jap'd, Brass Knobs:
Inch 6 8 10
Per doz.....$0.75 .95 1.25
Wrought Barrel Japanned, 80&10@80&10&5%
Barrel Bronzed....60&10%
Spring ....70&10@70&10&10%
Shutter ....50&5@50&10&5%
Square Neck....75@75&10%
Square ....70&10&10@80%
Ives' Mortise....10%
Ives' Wrought Metal....10%

Expansion—
F. H. Evans' Crescent....40@60%
Richards Mfg. Co....55&10%
Star Expansion Bolt Co.:
Star, Lag Screw Type..60&10&5&2½%
Star, Wood Screw Type....40%
Star, Machine, Single Wedge..60@10%
Star, Machine, Double Wedge..60@10%
Steward & Roman Mfg. Co.:
Style No. 13, Double....60@10%
Style No. 1, Single....60@10%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

Plow and Stove—
Plow ....65&5@70%
Stove ....85@85&5%

Tire—
Common Iron....80%
Norway Iron....80%
American Screw Co.:
Norway Phila., list Oct. 16, '84..80%
Eagle Phila., list Oct. 16, '84..82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84..80%
Eagle Phila., list Oct. 16, '84..82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84....80%
Eagle 82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

Borers, Bung—
Borers Bung, Ring, with Handle:

Inch.....	1¼	1½	1¾	2
Per doz...	$4.80	5.60	6.40	8.00
Inch.....		2¼		2½
Per doz.....		$8.65		11.50

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

Boxes, Mitre—
C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme ....15&10%
Perfection 40%
Seavey 45%

Braces—
Common Ball....$1.50@$1.75
Barber's ....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 61, 166, 206, 614....50%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

Brackets—
Wrought Steel....80@80&5%
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Stanley's Pressed Steel....80%
Stanley's Folding Brackets..70&10&5%
Taplin Victor Handy Egg Beater Bracket ....₩ doz. $1.50

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—
Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

Buckets, Galvanized—
M'fr's list, price per gross, subject to discount of 10&7½&5&5 &10&5%.

Quart.....	*10*	*12*	*14*
Water, Light....	*$28.35*	*30.75*	*34.75*
Water, Ex. Heavy	*46.85*	*49.35*	*53.25*
Fire, Rd. Btm...	*33.50*	*35.90*	*39.90*
Well	*37.35*	*41.35*	*45.35*

Bull Rings—See *Rings, Bull.*

Butts—Brass—
Wrought 65%
Cast Brass, Tiebout's....40&10%

Cast Iron—
Fast Joint, Broad....40&10&50%
Fast Joint, Narrow...40&10@50%
Loose Joint....70&10@75%
Loose Pin....70&10@75%
Mayer's Hinges....70@70&5
Parliament Butts....70@70&5

Wrought Steel—
BRIGHT.
Light Narrow, Light Reversible ....75&5%
Reversible and Broad.75&10%
Loose Joint, Narrow, Light Inside Blind, &c.....75%
Back Flaps, Table Chest.70%
BRONZED.
Light Narrow, Loose Pin..55%
Light, Loose Pin, Ball Tip.65%
Broad 55%

Extra, 5@—

Cages, Bird—
Hendryx Brass: Series 3000, 5000, 1100, net list; 1200, 15%; 200, 3x3, 900 ..... 30%
Hendryx Bronze: Series 700, 800 ..... 30%
Hendryx Enameled 35%

Calipers—See *Compasses.*

Calks, Toe and Heel—
Blunt, 1 prong, per 100 lb., $3.50@$3.85
Sharp, 1 prong, per 100 lb., $4.00@$4.35
Burke's, 1 pg. Blunt Toe, 3¾¢; 2 pg. Blunt Toe, 4¾¢; 1 pg. Sharp Toe, 4¼¢; 2 pg. Sharp, 4¾¢; Blunt Heel, 4¼¢; Sharp Heel ..... 4¾¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

Can Openers—
See *Openers, Can.*

Caps, Percussion—
Eley's E. B. ..... 52@55¢
G. D. ..... per M. 34@35¢
F. L. ..... per M. 40@42¢
G. E. ..... per M. 48@50¢
Musket ..... per M. 62@63¢

Primers—
Berdan Primers, $2 per M. 20&5%
Primer Shells and Bullets. 15&10%
All other primers per M. $1.52@1.60

Carpet Stretchers—
See *Stretchers, Carpet.*

Cartridges—
Blank Cartridges:
32 C. F., $5.50 ..... 20&5%
38 C. F., $7.00 ..... 10&5%
22 cal. Rim, $1.50 ..... 10&5%
32 cal. Rim, $2.75 ..... 10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball $1.40
Central Fire 25%
Target and Sporting Rifle. 15&5%
Primed Shells and Bullets. 15&10%
Rim Fire, Sporting 30%
Rim Fire, Military ..... 15&5%

Casters—
Bed ..... 65&10@70%
Plate ..... 60@60&5%
Philadelphia ..... 70&10@75%
Acme, Ball Bearing 35%
Gem (Roller Bearing) ..... 70&10&10&5%
Steel Gem (Roller Bearing) 70%
Standard Ball Bearing 45%
Yale (Double Wheel) low list ..... 40&10%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Proof Coil—
American Coil, Straight Link:

3-16	¼	5-16	⅜	½	⅝
$7.45	4.80	3.85	3.25	3.10	3.00

¾-⅞-1. 1⅛ to 1¼ inch.
$2.90 3.00
German Coil ..... 70&5%
German Pattern Coil:
6-0 to 1 ..... 70&10&5%
2 and 3 ..... 60&10&10@70%
4, 5 and 6 ..... 50&10@50&10&5%

Halter—
Halter Chains ..... 60&5@60&10%
German Pattern Halter Chains, list July 24, '97 ..... 70&5%
Covert Mfg. Co.:
Halter ..... 35&5%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6½—6-3, Straight, with ring. $26.00
6½—6-2, Straight, with ring. $27.00
6½—8-2, Straight, with ring. $30.00
6½—10-2, Straight, with ring. $35.00
NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.
Eastern Standard Traces, Wagon Chain, &c ..... 70&10@—%

Miscellaneous—
Jack Chain:
Iron ..... 60&10&5@60&10&10%
Brass 65%
Safety and Plumbers' Chain. 75%
Gal. Pump Chain ..... lb., 14½@5%
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog ..... 50&10@60%
Brown Halter and Coil ..... 45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain 70%
Universal Dbl.-Jointed Chain 70%

Chain and Ribbon, Sash—
Oneida Community:
Steel Chain 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set. 8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set. 8¢

Chalk—
Carpenters' Blue. ..... gro., 50@55¢
Carpenters' Red. ..... gro., 50@55¢
Carpenters' White. ..... gro., 40@45¢

Checks, Door—
Bardsley's 45%
Pullman, per gro. $14.00
Russwin 33⅓%

Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools 55%
Youths' Chests, with Tools 40%
Gentlemen's Chests, with Tools. 30%
Farmers', Carpenters, etc., Chests, with Tools 20%
Machinists' and Pipe Fitters' Chests, Empty 45%
Tool Cabinets 45%
C. E. Jennings & Co.'s Machinists' Tool Chests 7½%

Chisels—
Socket Framing and Firmer
Standard List. .80&10@80&10&10%
Buck Bros. 30%
C. E. Jennings & Co.:
Socket Firmer No. 10 ..... 25&7½%
Socket Framing No. 15 ..... 25&7½%
Swan's ..... 66⅔&67½%
L. & I. J. White & Co. ..... 30@30&5%

Tanged—
Tanged Firmers ..... 30&5@35%
Buck Bros. 30%
C. E. Jennings & Co. Nos. 191, 181. 25%
L. & I. J. White Co. ..... 25&5%

Cold—
lb.
Cold Chisels, good quality. 13@15¢
Cold Chisels, fair quality. 11@12¢
Cold Chisels, ordinary .... 9@10¢
Elmore Tool Mfg. Co.:
Cold Chisels ..... 50&5%

Chucks—
Almond Drill Chucks 35%
Almond Turret Six-Tool Chuck 40%
Beach Pat. each $8.00 ..... 35&5%
Blacksmiths' 25%
Cincinnati Chuck Co.:
Independent 4-jaw Reversible 35%
Empire 25%
Jacobs' Drill Chucks 35%
Morrow Ball Bearing Drill Chucks. 35%
Pratt's Positive Drive 25%
Skinner Lathe Chucks:
Independent 35%
Universal, Reversible Jaws 35%
Universal, Com. Style Jaws 40%
Combination, Reversible Jaws 35%
Combination, Com. Style Jaws 40%
Round Body or Box Body, 2 Chuck Jaws 25%
Geared Scroll Chucks 25%
Drill Chucks:
New Model, 25%; Geared Pattern, 25%; Skinner Patent, .. 25%
Positive Drive 40%
Planer Chucks 20%
Standard 45%
Drill Press Vises 35%
Face Plate Jaws 35%
Standard Tool Co.:
Improved Drill Chuck 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21 ..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35. 25%
Independent Iron, Nos. 18 and 318. 35%
Independent Steel, No. 64 ..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104 ..... 35%
Union Czar Drill 25%
Universal, 11, 12, 16, 17, 13, 14, 15. 40%
Universal No. 42 ..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50 ..... 35%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks 50%
Little Giant Auxiliary Drill 50%
Little Giant Double Grip Drill 50%
Little Giant Drill, Improved 50%
Oneida Drill 50%
Scroll Combination Lathe 50%
Whitaker Mfg. Co.:
National Drill 25%

Clamps—
Carriage Makers', Star, P., S. & W. Co. 50%
Besly, Parallel ..... 33⅓&10%
Hammer & Co.:
Adjustable ..... 20&5%
Carriage Makers' H. P. Screw. 40&5%
Myers' Hay Rack 50%
Lineman's Swedish Neverturn 65%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain,
Iwan's Champion, Adjustable 50%
Iwan's Champion, Stationary 40%

Sidewalk—
American Fork & Hoe Co.:
Star, ℔ doz., Socket, $4.00; Shank $3.50
Shank, ℔ doz., X 7/8, $3.50; Shank, X 8 ..... $3.75

Cleavers, Butchers'—
Foster Bros. 30%
Fayette R. Plumb 30%
L. & I. J. White Co. 30%

Clippers, Horse and Sheep—
Chicago Flexible Shaft Co.:
1902 Chicago Horse, each. $10.75
20th Century Horse, each. $5.00
Lightning Belt Horse, each. $15.00
Chicago Belt Horse, each. $20.00
Stewart's Enclosed Gear Ball Bearing Horse, each $7.50
Stewart's New Model Sheep Shearing Machine, each. $12.75
Stewart Enclosed Gear Shearing Machine, No. 5, each. $9.75
} 25% 40%

Clips, Axle—
Regular Styles ..... 80&80&10%

Cloth and Netting, wire—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c 75%
Compression Bibbs 70%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list 40%
Leather, Walter B. Stevens & Son's list 40%

Compasses, Dividers, &c.
Ordinary Goods ..... 5@75&5%

Conductor Pipe,—
L. C. L. to Dealers:

Gal. Steel.	Charcoal.	Copper.
Northeastern:		
70&10@—%	50&10&7½%	50&10%
Eastern:		
75@—%	50&10&7½%	50&10%
Central:		
75@—%	60%	50&10%
Northwestern:		
75@—%	60%	50&10%
Western:		
70&10@—%	50&12½%	50&5%
Tennessee:		
70&10@—%	50&12½%	50&10%
Southern:		
70&10@—%	50&12½%	50&5%
Southwestern:		
70@—%	50&5%	50&5%

Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.

See also Eave Troughs.

Coolers, Water—
L. & G. Mfg. Co.:

Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90

Galvanized, Lined, side handles,

Gal.	2	4	6	8
Each	$1.35	$2.15	$2.40	$3.30	$4.15

White Enameled 10%
Agate Lined 10%

Coppers' Tools—
See *Tools, Coopers'.*

Coppers, Soldering—
Soldering Coppers, 3 lb. to pair and heavier, 21½¢; lighter than 3 lb. to pair ..... 23½¢

Cord—Sash—
Braided, Drab ..... lb. 35¢
Braided, White, Com., Nos. 8 to 12, 23½¢; No. 7, 23¢; No. 6, 21¢. In lots of 12 doz. or over, 1 cent less per pound.
Cable Laid Italian, lb., No. 18. 37¢
Italian, lb., A, No. 18, 25¢; B, 22¢
Common India ..... lb., 11@11½¢
Cotton Sash Cord, Tw'ted. 18@20¢
Patent Russia ..... lb. ... 20¢
Cable Laid Russia ..... lb. .. 21¢
India Hemp, Br'd'd ..... lb .. 21¢
India Hemp, Twisted. .. lb. 13@14¢
Patent India, Twisted. .. lb. .. 17¢
Pearl Braided, cotton, No. 6, ℔ lb. 20½¢; No. 7, 19½¢; Nos. 8 to 12, 19½¢, in 12 doz. to 100 doz. lots.
Eddystone Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢.
Harmony Cable Laid Italian, Nos. 7 to 10 ..... ℔ lb 23¢
Pullman:
Wire Sash Cord 10%
Sash Cord Attachments, per 100. $2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord ..... 50¢
Massachusetts, White ... ℔ lb 40¢
Massachusetts, Drab ... ℔ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12. ... 27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen ... 37½¢
See also Chain and Ribbon.

Wire, Picture—
Full Length ..... 90@—%
Short Length ..... 90&20@—%
Hendryx Standard Wire Picture Cord ..... 90&10%
Turner & Stanton Co. Wire Picture Cord 90%

Cradles—
Grain 50%

Crayons—
White Round Crayons, Cases, 100 gro., $8.00, $8.50, $9.00 and $10.00 according to grade.
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible ... $7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black $4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks $10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x 1½ x 3-16, $2.50; 5 x 1¼ x 3-16 ..... $3.00
Suremark, Black, $2.25; Blue, Red and Yellow $2.50

Crooks, Shepperds'—
American Fork & Hoe Co.:
Montana ..... ℔ doz. $4.50

Crow Bars—See *Bars, Crow.*

Cultivators—
American Fork & Hoe Co.:
Victor Garden ..... 50&10%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847. ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son ..... ℔ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co. 40%
Red Devil 60%
B. Mfg. Co. 40%
Woodward 50%

Meat and Food—
American 30%

Nos.	401	402	403	404	405	406	407
Each	$6	$7	$10	$12	$25	$50	$60

Enterprise:

Nos.	5	10	12	22	32	
Each	$2	$3	$2.75	$4.50	$6	25@25&7½%

No. 202, $1.50 ..... 10&7½%
P., S. & W. Co.:
Ideal ..... 40@40&5%
Hales ..... 60&5%
Little Giant ..... ℔ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$38.00	$44.00	$72.00	$88.00

New Triumph No. 605, ℔ doz. $24.00. 40%
Russwin Food, No. 1, $24.00; No. 2, $27.00; 3, $12.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers ..... 25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw and Kraut Cutters 35%
Corn Graters 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife ... ℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

Tobacco—
All Iron, Cheap ... doz. $1.25@4.50
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

Diggers, Post Hole, &c—
Disston's:
Rapid, ℔ doz., $24.00 ..... 25%
Samson, ℔ doz., $34.00 ..... 25%
Iwan's Pat. Post Hole and Well Auger 40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. $8.50
Split Handle Post Hole Diggers ℔ doz., $7.50
Hercules Pattern, ℔ doz. $9.50
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer $7.50
Never-Break Crucible Steel Post Hole Diggers 60%

Dividers—See *Compasses.*

Drawing Knives—
See *Knives, Drawing.*

Dressers Emery Wheel—
Sterling Emery Wheel Dressers 35%
Sterling Wheel Dresser Cutters 35%

Drills and Drill Stocks—
Blacksmith's Common Drilling Machines ..... $1.50@1.75
Breast, Millers Falls ..... 15&10%
Breast, P., S. & W. 33⅓%
C. & C. Ratchet 25%
Reversible Ratchet Die Stocks 25%
Goodell Automatic Drills. 50&10&10&10%
Millers Falls Automatic Drills, Graves', per doz., Nos. 1, $4.86; 2, $8.16
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis 25%
Ratchet, Parker's 40%
Ratchet, Weston's 40%
Ratchet, Weston's, Style H Improved ..... 40@40&5%
Ratchet, No. 012 ..... 40@40&5%
Ratchet, Celebrated ..... 40@40&5%
Ratchet, Whitney's, P., S. & W. ..... 40&10@50%
Star Drills ..... 50&10%
Star Pipe Drills 50%
Star Drill Holders ..... 50&10&10%
Star Drill Points ..... 50&10&10%
Whitney's Adjustable, No. 10, $12.00. 33⅓%

Twist Drills—
Bit Stock ..... 70@70&10%
Taper and Straight Shank. 65@65&10%

Drivers, Screw—
Screw Driver Bits, per doz. 45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2¼-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits 30%
Champion 50%
Disston's Screw Drivers, Handles and Ferrules 70%
Elmore Tool Mfg. Co.:
Elmore 60%
Hartford 66⅔%
Indestructible ..... 55&7½%
Standard Neverturn 66⅔%
Star ..... 75&5%
Screw Driver Bits 25%
Fray's Hol. H'dle Sets, No. 3, $12.50
Ford's Brace Screw Drivers ..... 40&10%
Gay's Double Action Ratchet 35%
Goodell's Auto ..... 65@65&10%
Mayhew's Black Handle 40%
Mayhew's Monarch 40%
Millers Falls, ℔ doz., Nos. 11, $9.96; 12, $13.73; 20, $8.17; 21, $9.46; 41, $13.43; 42, $17.21.
Swan's:
Nos. 7565 to 7568, 60%; No. 7540 ..... 40&10%

Eave Trough, Galvanized—

Territory.	Gal. Steel.	Copper.
Northeastern	75&10&5%	50&10%
Eastern	80%	50&10%
Central	80&10&5%	50&10%
Northwestern	80&10&5%	50&10%
Western	80&5%	50&5%
Tennessee	80&5%	50&10%
Southern	75&10%	50&5%
Southwestern	75&10&2½%	50&5%

Terms.—2% for cash. Factory shipments generally delivered.
Note.—Lower prices are quite general owing to market irregularities.
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories

	Galv. Steel,	Galv. C. I. and Copper.
Sizes 2, 3, 4		30%
Sizes 1½, 2½, 3½, 5, 6		60&10%
No. 26		50%
No. 24		25%
Copper Elbows		50%

Elbows, Stove Pipe—
Edwards, Standard Blue ..... 40&10&10%
Edwards, Royal Blue ..... 40&10&10%
Reeves, Dover, Flat Crimp. 40&10&5%

Emery, Turkish—

	½ to 4s:	5½ to 220:	Flour
Kegs ..... lb.	5¢	5¼¢	3¼¢
½ Kegs ..... lb.	5½¢	5¾¢	3¾¢
¼ Kegs ..... lb.	5½¢	6¢	4¢

10-lb. cans, 10 in case....6½¢ 7 ¢ 8 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extensions, Bit—
Ford's Auger Bit Extensions....40&5%

Extractors, Lemon Juice—
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's Jap'd and Galv., 50 & 5%; Bronze and Plated.....50%
Walling's 50%
Upson's Patent.....40%

Cord and Weight—
Ives, ₩ gro., $1.05.....10%
Titan, ₩ gro., $0.66.....10%

Corrugated—
Acme Corrugated Fasteners.....70%

Faucets—
Cork Lined.....50&10@60%
Metallic Key, Leather Lined, .. 60&10@70%
Red Cedar.....40&5@40&10&5%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined....50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
Self Measuring:
Enterprise, Self Measuring and Pump, ₩ doz., $36.00.....40&10%
Lane's, ₩ doz., $36.00.....40&10%
National Measuring, ₩ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
Best Brands.....70&10@75&10%
Standard Brands.....75&10@80%
Lower Grade....75&10&10@80&10%
Diston's Superfine.....60%
Gold Medal.....70%
McCaffrey's American Standard, 60&10&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '07.....33⅓@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 .....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

Inch	*15*	*17*	*19*	*21*
Per doz.	*$3.60*	*3.85*	*4.15*	*4.65*

Peck, Stow & Wilcox Co.:

In	15	17	19	21	24	
	$4.00	4.40	4.75	5.50	6.50	30%

Reading Hardware Co.....60%

Fodder Squeezers—
See *Compressors.*

Forks—
American Fork & Hoe Co.:
Iowa Dig-Ezy Potato.....70&5%
Hay, Regular, 3-tine.....45&20&12½%
Hay, Regular, 4-tine.....60&7½&5%
Champion, Hay.....60&12½%
Acme, Hay.....60&20%
Manure, Regular, 4-tine.....65&5%
Manure, Regular, 5 and 6 tine....70%
Champion, Manure.....65&5%
Columbia, Manure.....70%
Acme, 4-tine.....60&10&5%
Round Shoulder Header, 4-tine..65%
Champion, Header.....65%
Dakota, Header.....65%
Kansas Header.....65%
Wood, Barley.....35&5%
Steel, Barley.....66⅔%
Columbia, Spading.....70&7½&5%

Frames— Wood Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz.$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.....	*1*	*2*	*3*	*4*	*6*
Each....	*$1.25*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped.. 3.65
Waterproof Dbl. Taped.. 4.40
Waterproof Tpl. Taped.. 5.15
10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80@80&5%

Gauges—
Marking, Mortise, &c..50@50&10%
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Diston's Marking, Mortise, &c.60&10%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.50; 2, $2.60
Spike, Wood Handled, No. 1, $4.30; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....65@65&10%
Disston & Sons.....60&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush, 25&10@50%
Elwell's 50%

Grease, Axle—
Common Grade...gro.$6.00@$6.50
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, ₩ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grinders—
Pike Mfg. Co.:
Hand and Foot Power, Pyko Nos. 1, 2, 3; Pyko Primo; Pyko Peerless; Pyko Spiral (foot power).33⅓%
Mower Knife and Tool, $5.00..40&10%
Royal Mfg. Co.:
Hand and Foot Power, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....33⅓%
Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50 .....40%
Disc Grinders, each, $2.50.....40%

Grindstones—
Pike Mfg. Co.:
Improved Family Grindstones, ₩ inch, ₩ doz., $2.00.....33⅓%
Richards Mfg. Co., Ell and Cycle, Ball Bearing, mounted.....40%

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....70&10@—%
Bridgeport Chain Co.:
Triumph Coil and Halters.35&3½@40%
Brown Coil and Halters...15@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....30%
Cotton Rope.....45%
Hemp Rope.....65%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters...45@50&5%
Niagara Cow Ties.....45&5@50&10&5%

Hammers—
Handled Hammers—
Heller's Machinists'....55&10@55&10&5%
Heller's Farriers.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10@60%
Farriers' .....40&10@50%
Riveting .....40&10@50%
Machinists' .....66⅔@5%
Blacksmiths' 50%
Elmore Shoemakers' Hammers.....70%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60&10&5%
Rivet and Tinners'.40&7½@40&12½&5%
Victor Magnetic Tack, ₩ gro....$7.75

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢...80&10%
3 to 5 lb., per lb., 40¢...80&10&10%
Over 5 lb., per lb., 30¢.....
Over 5 lb., per lb., 30¢..80&10&10%

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....40%
Fork, Shovel, Spade, &c.:
Long Handles.....40%
D Handles.....40%

Cross-Cut Saw Handles—
Atkins' 40%
Diston's Handles and Saw Tabs..45%

Mechanics' Tool Handles—
Auger, assorted...gro.$3.00@$3.50
Brad Awl.....gro.$1.65@$1.75
Chisel Handles, Ass'd, per gro.:
Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40
Socket Firming, Apple, $1.75@ $1.95; Hickory.....1.60@1.75
Socket Framing, Hickory, $1.80@$1.75
File, assorted.....gro.$1.30@$1.40
Hammer, Hatchet, &c., 60&10@60&10&5%
Hand Saw, Varnished, doz., 80& 85¢; Not Varnished.....65@75¢
Plane Handles:
Jack, doz., 30¢; Fore, doz...45¢
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Milliers Falls Adj. and Hatchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ₩ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool, ₩ gro., No. 1, $3.00; No. 2, $2.50; No. 3, $2.00; No. 4, $1.50; No. 5, $10.00.....gro. lots 10%

W. A. Zelnicker Supply Co.:
Hammer, ₩ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 12., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ₩ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ₩ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ₩ doz., 36 in., $5.80; 36 in., $7.80.
Pick, ₩ doz., R. R., 36 in., $3.00; coal, 34 in., $5.80.
Hatchet, ₩ doz., 12 to 14 in., $2.00.
50%

Hangers—
NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22 $18.00.....60&10%
Bull Dog, $21.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion per set of 4 Hangers, complete with track.....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Trolley Hangers and track..50%
Lawrence Bros.:
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
Trolley, No. 30, ₩ pair.....$1.25
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2..70%
Anti-Friction 60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3..$2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 18.....50&10%
Seal, Steel Track No. 8.....$2.25
Anto Adj. Track No. 22..50&5%
Trolley B. D. No. 17, $1.25; F. D., No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44, 2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing, ₩ doz. 4 in., $12.00; 5 in., $14.00..40&10%
Myers' Stayon Hangers.....60%

Hangers— Garment—
Pullman Trouser, ₩ gro. No. 1 $9.00; No. 4, $21.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....₩ gro. $9.60

Gate—
Myers' Patent Gate Hangers, ₩ doz. net 50%

Joist and Timber—
Lane Bros. Co.....35%

Hasps—
Griffin's Security Extra.....50&10%
McKinney's Patent Hasp, ₩ doz..60%

Hatchets—
Regular list, first qual.50&10@60%
Second quality.....60@60&10%

Heaters, Carriage—
Clark, No. 5, $1.25; No. 5B, $1.50; No. 3, $1.75; No. 3D, $2.00; No. 7D, $2.25; No. 3E, $2.50; No. 1, $3.00.....25%
Clark Coal, ₩ doz., $0.75.....20%

Hinges—
Blind and Shutter Hinges
Surface Gravity Locking Blind: Doz. Sets with Fastenings, No. 1, $0.70; No. 3, $1.25; No. 5, $2.65.
Mortise Shutter.....80%
Mortise Reversible Shutter..80%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70&7½%
Parker Wire Goods Co.
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%

Reading's Gravity.....40%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ₩ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Clark's O. P., No. 1.....75&10%
Clark's O. P., Nos. 3 and 5....75&5%
Tip Pat'n, No. 1.....75&10%
Clark's No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire 65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L'r'chs.	*$2.00*	*2.70*	*5.00*
Hinges only.....	*1.25*	*1.90*	*3.50*
Latches only.....	*.70*	*.75*	*.35*

New England:
With Latch.....doz..@$2.00
Without Latch.....doz..@$1.60
Reversible Self-Closing:
With Latch.....doz..@$1.75
Without Latch...doz....@$1.35
Western:
With Latch.....doz. $1.75
Without Latch.....doz..$1.15
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

Miscellaneous—
Griffin Mfg. Co., Fleur de Lis Surface Hinges, ₩ doz. prs.....$1.00

Pivot Hinges—
Bommer Bros. Pivot, Ball Bearing 40%
Lawson Mfg. Co. Matchless.....30%

Spring Hinges—
Holdback, Cast Iron...$6.75@$7.00
Non-Holdback, C'st Iron$6.50@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Spring Butt Hinges.....40%
Surface Floor, Ball Bearing 40%
Mortise Floor, Ball Bearing.40%
Lavatory Hinges.....40%
Non-Holdback Screen Door, Nos. 2000 and 900.....40%
Holdback Screen Door, No. 999.....₩ gro, $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor.50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, ₩ gr., No. 14, $9.00; No. 18.....$25.00
Columbia, Adj., No. 7, ₩ gr.$12.00
Gem, new list.....30%
Clover Leaf and Acorn, per gro, ...$12.00
Oxford, new list.....30%
Floor Spring Hinges.....65&10%
Columbian Steel.....65&10%
Lawson Mfg. Co.:
Matchless Spring Hinges.....30%
Matchless Jamb Hinges.....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....₩ gr. $9.00
Chief Ball Bearings Floor Hinge 50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ₩ gr, pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....40%
Spring Hinges.....40%

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—
Strap and T Hinges, &c., list February 10, 1908:
Light Strap Hinges....65%
Heavy Strap Hinges....75%
Light T Hinges.....60%
Heavy T Hinges....40&10%
Extra Hvy. T Hinges.65&10%
Hinge Hasps.....40%
Cor. Heavy Strap.....75%
Cor. Ex. Heavy T...65&10%
Extra, 5¢ —

Screw Hook and Strap. { *6 to 12 in..lb.3½¢* / *1½ to 20 in..lb.3¼¢* / *22 to 36 in..lb.3 ¢*

Screw Hook and Eye:
¾ to 1 inch.....lb.6¼¢
⅝-inch .....lb.7½¢
½-inch .....lb.8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—
M'f'gr's list, price per gross:

Inch	*15*	*16*	*17*	*18*
Galv. Open....	*$35*	*$39*	*$42*	*$46*
Jap. Open....	*26*	*28*	*31*	*35*
Galv. Funnel...	*43*	*48*	*52*	*56*
Jap. Funnel....	*33*	*36*	*39*	*43*

50&7½&5%

Masons' Etc.
Cleveland Wire Spring Co.:
Steel Brick, No. 102.....each $1.05
Steel Mortar, No. 152.....each $1.35

Hoes— Eye—
Scovil and Oval Pattern, 60&10@60&10&10%
Grub, list Feb. 23, 1899, 70&10@70&10&10%
D. & H. Scovil....27½%
Am. Fork & Hoe Co. (Scovil Pattern)....60&5%

Handled—
Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit....$2.50
American Fork & Hoe Co.:
Regular, Cotton....75&10&5&2½%
Crescent, Cultivator....75&2½%
Mattock, Senior....70%
Mattock, Junior....70%
Sprouting....50%
Tobacco, Harper's....66⅔&15&10%
Warren....55&10&10&5%
Ivanhoe....65&15&10%
Cultivator, B B 6....70&10&10&5%
Cultivator, B B 6½....70&10&10&5%
Weeding, Acme....72½&10&2½%
Scuffle, Lightning....60&5%

Hoisting Apparatus—
See *Machines, Hoisting.*

Holders— Bit—
Angular, ℔ doz. $24.00....45&10%

Door—
Bardsley's, Iron, 40%; Brass and Bronze....15%
Empire....5%
Pullman....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip....50%
Superior....40%

File and Tool—
Nicholson File Holders and File Handles....33⅓&40%

Fruit Jar—
Triumph Fruit Jar Holder, ℔ gross, $18.00; ℔ doz....$2.00

Trace and Rein—
Fernald Double Trace Holder, ℔ doz. pairs....$1.25
Dash Rein Holder, ℔ doz....$1.25

Hones—Razor—
Pike Mfg. Co., Belgian and Swaty, 50%; German....33⅓%

Hooks—Cast Iron—
Bird Cage, Reading....40%
Clothes Line, Reading List....40%
Coat and Hat, Reading....45&20%
Coat and Hat, Wrightsville....60&5%
Harness, Reading List....40%

Wire—
Belt, Nos. 1 to 15....75&10@80%
Wire C. & H. Hooks..80@80&10%
Bradley Metal Clasp Wire, Coat and Hat, 75&10@80%; Ceiling..75&10@80%
Columbian Hdw. Co., Gem....75&10%
Parker Wire Goods Co., King..75&10%
Wire Goods Co.: Acme, 60&10%; Chief, 70&10%; Crown, 75%; Czar, 65&10%; Brace, 75%; Czar Harness, 50%; Ceiling, 75%.

Wrought Iron—
Box, 6 in., per doz., $0.90; 8 in., $1.15.
Cotton....doz. $1.25@$1.50
Wrought Staples, Hooks, &c.—See Wrought Goods.

Miscellaneous—
Hooks, Bench, see *Stops, Bench.*
Hush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65
Grass, best, all sizes, per doz., $2.75@$3.00
Grass, common grades, all sizes, per doz....$1.25@$1.50
Whiffletree....lb. 5¼@6¢
Hooks and Eyes:
Brass....60@60&10%
Malleable Iron....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks....40%
Turner & Stanton Co. Cup and Shoulder....85&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See *Nails, Horse.*

Horseshoes—
See *Shoes, Horses.*

Hose, Rubber—
Garden Hose, ¾-inch:
Competition....ft. 6@6¼¢
3-ply Guaranteed....ft. 8½@9¢
4-ply Guaranteed....ft. 9½@12¢
Cotton Garden, ¾-in., coupled:
Low Grade....ft. 8@ 9¢
Fair Quality....ft. 10@11¢

Irons— Sad—
From 4 to 10....lb. 3½@3¾¢
B. B. Sad Irons....lb. 3¼@3½¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Caps	86	93	96	93
Tin'd Caps	.91	88	1.01	98

New England Pressing..lb. 3¾@4¢

Bar and Corner—
Richards Mfg. Co., Bar, 60&10%; Corner....60%

Pinking—
Pinking Irons....doz. 60@65¢

Irons, Soldering
See *Coppers.*

Jacks, Wagons—
Covert Mfg. Co.: Auto Screw....30&2%; Steel, 45%
Lockport....50%
Lane's Steel....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s....25%

Ladder—
Richards Mfg. Co., Ladder Jacks..50%

Jointers—
Pike Mfg. Co., Saw Jointers, $7.00..40%

Kettles—
Brass, Spun, Plain....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c....30%
Wilkinson Shear & Cutlery Co....60%

Corn—
Columbian Cutlery Co., Wilcut Brand Knives and Hooks....60%
American Fork & Hoe Co.:
Easy Cut, ℔ doz. No. 10 C H...$2.10
Easy Cut, ℔ doz., No. 10 B C H..$2.20
Acme, ℔ doz....$2.35
Dent, ℔ doz....$2.35
Adjustable, Serrated, ℔ doz....$1.90
Serrated, ℔ doz....$1.85
Yankee, No. 1 C H....$1.35
Yankee, No. 2 C H....$1.15

Drawing—
Standard List....80&10@—%
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's....66⅔@70%
Watrous....16⅔%
L. & I. J. White....20&5@25%

Hay and Straw—
Serrated Edge, per doz. $5.00@5.50
Iwan's Sickle Edge....℔ doz. $9.50
Iwan's Serrated....℔ doz. $10.00

Miscellaneous—
Farriers' ....doz. $2.60@3.55
Wostenholm's ....℔ doz. $3.00@3.25

Knobs—
Base, 2½-inch, Birch or Maple, Rubber Tip....gro. $1.25@1.40
Carriage, Jap., Drive, all sizes, gro. 35@40¢
Door, Mineral....doz. 65@70¢
Door, Por. Jap'd....doz. 70@75¢
Door, Por. Nickel..doz. $2.05@2.15
Bardsley's Wood Door, Shutters, &c. 15%

Lacing, Leather—
See *Belting, Leather*

Ladders, Store, &c.—
Lane's Store....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112....50%
Climax Shelf, No. 113....50%
Trolley, No. 109....50%

Ladles, Melting—
L. & G. Mfg. Co., Melting and Plumbers'....25%
P., S. & W....40&10%
Reading....60%

Lamps,—
Hammer's M. I. Hand....45%

Lanterns—Tubular—
Regular, No. 0....doz. $4.00@4.50
Side Lift, No. 0...doz. $4.25@4.75
Hinge Globe, No. 0. doz. $4.25@4.75
Other Styles....40&5%

Bull's Eye Police—
3-inch....$3.75@4.00

Latches— Thumb—
Roggin's Latches, Jap'd, with Screws....doz. 35@40¢

Door—
Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Richards' Bull Dog, Heavy, No. 125....50&5%
Richards' Trump, No. 127....$1.50

Leaders, Cattle—
Small....doz. 50¢; large, 60¢
Covert Mfg. Co.: Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

Leathers, Pump—
See *Pumps—*

Lifters, Transom—
R. & E....10%

Lines—

Wire Clothes, Nos.	*18*	*19*	*20*
100 feet	*$2.30*	*1.95*	*1.75*
75 feet	*$1.95*	*1.65*	*1.50*

Samson Cordage Works: Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50....℔ gr. 20%
Masons' Lines, Shade Cord, &c.; White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25....20%
Turner & Stanton Co.: Solid Braided Chalk, Masons' and Awning Lines....40%
Clothes Lines, White Cotton....20%
Shade Cord, Cotton or Linen....20%

Locks— Cabinet—
Cabinet Locks....33⅓@33⅓@5%

Door Locks, Latches, &c.—
NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co....40%
R. & E. Mfg. Co....10%

Padlocks—
R. & E. Mfg. Co. Wrought Steel and Brass....75&10%

Sash, &c.—
Ives' Patent: Crescent....10%
Automatic Gravity Metal Sash, ℔ gro., $149.58....10%
Window Ventilating....10%
Pullman Patent Ventilating Lock..25%
Reading Sash Locks....40%
Taylor Mfg. Co., Perfect Ventilating, ℔ doz....$0.75@$1.00

Machines—Boring—
Com. Upr't, without Augers, $2.00@2.25
Com. Angl'r, without Augers, $2.25@2.50
Ford Auger Bit Co....$22.00
Jennings', Nos. 1 and 4....25&7½%
Millers' Falls....5.75
Snell's, Upright, $2.65; Angular, $2.90
Swan's Improved....40&10%

Corking—
Reisinger Invincible Hand Power....℔ doz. $48.00

Fence—
Williams' Fence Machines....each, $5.50

Hoisting—
Moore's Anti-Friction Chain Hoist..30%
Moore's Hand Hoist, with Lock Brake....20%
Moore's Cyclone High Speed Chain Hoist....25%

Ice Cutting—
Chandler's....12½%

Washing
Boss Washing Machine Co.: Per doz.
Boss No. 1....$57.00
Boss Rotary....$57.00
Champion Rotary Banner No. 1..$57.00
Standard Champion No. 1....$50.00
Standard Perfection....$27.00
Cincinnati Square Western....$33.00
Uneeda American, Round....$33.60

Mallets—
Hickory....45&5@50%
Lignumvitæ....45&5@50%
Tinners' Hickory and Applewood....doz. 45&5@50%

Mangers, Stable—
Swett Iron Works....50%

Mats, Door—
Acme Flexible Steel....50%
Elastic Steel (W. G. Co.), new list..50%
Everlasting Flexible Steel....33⅓%

Mattocks—
See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—
Enterprise Mfg. Co.: Coffee....20@25%
Shell and Corn....25&10%
National list Jan. 1, 1902....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side....50&10%
Swift, Lane Bros. Co....30%

Motors, Water—
Divine's Red Devil....30%

$2.50	3.50	10.00	15.00	33⅓%
No. 1.	2	3	4	
Lippincott's: No.	1	2	3	4
	$2.50	3.50	10.00	15.00..33⅓%

Pike Mfg. Co., Tool and Knife Grinding....33⅓%

Mowers, Lawn—
NOTE.—Net prices are generally quoted
Cheapest, 10-in., $2.00; advance 10¢ for each size.
Cheap, 10-in., $2.25; advance 15@20¢ for each size.
Better Grade, 10-in., $3.00; advance 25¢ for each size.

	12	*14*	*16*	*18-in.*
High Grade	*$4.50*	*4.75*	*5.00*	*5.25*

Continental....60%
Great American....70%
Great American Ball B'r'g, new list..70%
Quaker City....70%
Pennsylvania....60%
Pennsylvania, Jr., Ball Bearing....50&10&5%
Pennsylvania Golf....50%
Pennsylvania Horse....33⅓&5%
Pennsylvania Pony....40&5%

Nails—
Wire Nails and Brads, Miscellaneous....35&5@35&10%
Cut and Wire. See *Trade Report.*
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	.. ℔ lb. net, 12¢
Coleman	13	12	12	11	11	net ℔ lb
New Haven	23	21	20	19	18	.. ℔ lb. net, 12¢
Livingston	19	18	17	16	16	....10%
Western						℔ lb 8½¢

Jobbers' Special Brands, per lb. 9¢

Picture—

	1½	2	2½	3 in.
Brass Hd. gro.	.45	.55	.60	.70
Por. Head, gro.	*1.10*	*1.10*	*1.10*	

Upholsters—
Brass....30%
Plated....30&10%

Nippers—
See *Pliers and Nippers.*

Nipples—
Standard Nipple Co.: Wrought Pipe Nipples....30%

Nuts— *Blank or Tapped.*

Cold Punched:	*Off list.*
Square	*5.40¢*
Hexagon	*6.00¢*
Square, C., T. & R.	*5.80¢*
Hexagon, C., T. & R.	*6.60¢*
Hot Pressed:	Off list.
Square	*5.90¢*
Hexagon	*6.40¢*

Oakum—
Best....lb. 6¼¢
U. S. Navy....lb. 6 ¢
Navy....lb. 5 ¢
Plumbers' Spun Oakum..2¾@3 ¢

Oil—
Pike Mfg. Co., Stonoil....40%

Oil Tanks—See *Tanks, Oil.*

Oilers—
Steel, Copper Plated....75&10%
Chase or Paragon:
Brass and Copper....50&10%
Zinc....65&10@70%
Railroad....60&10&10%
American Tube & Stamping Co.: Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%
Hero Fruit Jar Co.: Spring Bottom Cans....70@70&10%
Railroad Oilers, etc....60@60&10%
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 10%; Old Pattern, Nos. 1, 2, 3, 4, 50%.
Maple City Mfg. Co.: Spring Bottom Cans....70@70&10%
Railroad Oilers, &c....60@60&10%

Openers—Packing Box—
Herculever, ℔ doz., $24....30%

Can Openers—

	Per doz.
Sprague, Iron Handle	*30@35¢*
Sprague, Wood Handle	*40¢*
Sardine Scissors	*$1.75@3.00*

Can and Bottle Openers, ℔ doz., net: Yankee, $0.75@$0.85; Little Gem, $0.50@$0.65; Nifty....$0.75

Egg—
Hartigan Nickel Plate, ℔ doz., $2.00; Silver Plate, $4.00.

Packing—
Asbestos Packing, Wick and Rope, any quantity....16@17¢

Rubber—
(Fair quality goods.)
Sheet, C. I....11@12¢
Sheet, C. O. S....11@12¢
Sheet, C. B. S....12@13¢
Sheet, Pure Gum....40@45¢
Sheet, Red....40@50¢
Jenkins' '96, ℔ lb. 80¢....25%

Miscellaneous—
American Packing....lb. 7@10 ¢
Cotton Packing....lb. 16@25 ¢
Italian Packing....lb. 9@10¢
Jute....lb. 4@4¼¢
Russia Packing....lb. 9@10¢

Pails, Water, Well, &c.—
See *Buckets.*

Paint—
Dixon's Silica-Graphite, in 1 gal. pails and 5 gal. kegs, 25%; packages of larger size....20%

Pans— Dripping—
Standard List....75&10@80%
Edwards, Royal Blue....75%

Fry—
Common Lipped:

Nos.	*1*	*2*	*3*	*4*	*5*
Per doz.	*$0.75*	*0.85*	*0.95*	*1.15*	*1.30*

Refrigerator, Galva.—

Inch	*12*	*14*	*16*	*18*
Per doz.	*$1.75*	*2.25*	*2.80*	*3.15*

Paper—Building Paper

Asbestos:	*lb.*
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.	*2½¢*
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.	*3½¢*
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.	*3½¢*
	Per roll.
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll,	*48@58¢*
Medium weight, 30 lbs. to roll,	*66@70¢*
Heavy weight, 40 lbs. to roll,	*75@78¢*
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.	
Deafening Felt, 9, 6 and 4½ sq. ft. to lb., ton	*$54.56*
Red Rope Roofing, 250 sq. ft. per roll	*$1.75*

Tarred Paper—

1 ply (roll 400 sq. ft.), ton,	*$34.00@$38.00*
2 ply, roll 108 sq. ft.	*65¢*
3 ply, roll 108 sq. ft.	*88¢*
Slater's Felt (roll 500 sq. ft.)	*80¢*

Sand Paper and Cloth—
Flint and Emery....50&10%
Garnet Paper and Cloth....25%

Parers—Apple—
Goodell Co.:

Family Bay State	℔ doz. $15.00
Improved Bay State	℔ doz. $36.00
New Lightning	℔ doz. $7.00
Turn Table '98	℔ doz. $6.00
White Mountain	℔ doz. $5.00
Bonanza Improved	each $7.50
Dandy	each $10.00
Eureka Improved	each $20.00
New Century	each $20.00
Ranger	each $30.00

Livingston Nail Co.:

Daisy	℔ doz. $4.00
Little Star	℔ doz. $5.00
Rocking Table	℔ doz. $6.20

Reading Hardware Co.:
Advance ..... ₱ doz. $1.00
Baldwin ..... ₱ doz. $4.00
Reading 72 ..... ₱ doz. $3.25
Reading 76 ..... ₱ doz. $6.25

Orange—
Goodell Co., Success ..... each $20.00

Potato—
Saratoga ..... ₱ doz. $7.00
White Mountain ..... ₱ doz. $6.00

Picks and Mattocks—
(List Jan., 1908.)
List ..... 75&10%
Crónk's Handled Garden Mattock, ₱ doz., $3.00 ..... 33⅓%

Pinking Irons—
See *Irons, Pinking.*

Pins, Escutcheon—
Brass ..... 50@50&10%
Iron, list Nov. 11, '85 ..... 60@60&10%

Pipe, Cast Iron Soil—
Eastern Prices:
Standard, 2-6 in. 68⅔%
Extra Heavy, 2-6 in. 74⅔%
Fittings, Standard and Heavy 80¾%
Extra, 10 & 10&5%

Pipe, Merchant—
Carloads to Consumers:

	Steel. Blk. %	Steel. Galv. %	Iron. Blk. %	Iron. Galv. %
⅛ and ¼ in..				
⅜ in.....				
½ in.....	See Trade Report			
¾ to 6 in....				
7 to 12 in....				

Pipe, Vitrified Sewer—
Carload lots.
Standard Pipe and Fittings, 8 to 24 in., f.o.b. factory:
First-class 85%
Second-class 87½%

Pipe, Stove—

	Per 100 joints. C. L.	L. C. L.
Edwards' Nested:		
5 in., Standard Blue	$6.25	$7.25
6 in., Standard Blue	6.75	7.75
7 in., Standard Blue	7.75	8.75
5 in., Royal Blue	7.00	8.00
6 in., Royal Blue	7.50	8.50
7 in., Royal Blue	8.50	9.50
Wheeling Corrugating Co.'s Nested:		
5 in., Uniform Color	$5.90	$6.90
6 in., Uniform Color	6.40	7.40
7 in., Uniform Color	7.40	8.40

Planes and Plane Irons—
Wood Planes—
Bench, first qual. ..... 30@30&5%
Bench, second qual. ..... 40@40&5%
Molding ..... 25@25&5%
Chapin-Stephens Co.:
Bench, First Quality 30%
Bench, Second Quality 40%
Molding and Miscellaneous 25%
Toy and German 30%
Union 60%

Iron Planes
Chaplin's Iron Planes 60%
Union 60%

Plane Irons—
Wood Bench Plane Irons, list Dec. 12, '06 ..... 25%
Buck Bros. 30%
Chapin-Stephens Co. 25%
Union 50%
L. & I. J. White ..... 20&5@25%

Planters, Corn, Hand—
Kohler's Eclipse ..... ₱ doz. $7.50

Plates—
Felloe ..... lb. 3¾@4¼¢
Avery Stamping Co.:
Standard Wrot, Steel Felloe Plates in 100 lb kegs, per 100 lb, ¾-in. to 1¼-in., $4.00 net; 1¼-in. to 2-in., inclusive, $3.75 net.

Steel Pipe Hook—
Never-Break ..... 75&10%

Pliers and Nippers
Button Pliers ..... 75&5@75&10&5%
Gas Burners, per doz., 5 in., $1.25 @$1.30; 6 in., $1.45, $1.50.
Gas pipe.. 7 8 10 12-in.
$2.00 $2.25 $2.75 $3.50
Acme Nippers ..... 50&5%
Cronk & Carrier Mfg. Co.:
American Button 80%
Improved Button ..... 75&10%
Cronk's 60%
No. 80 Linemen's 50%
Stub's Pattern 45%
Combination and others 33⅓%
Elmore Tool Mfg. Co.:
Gas Pliers 70%
Wire and Cutting Pliers 75%
Heller's Farriers' Nippers, Pincers and Tools ..... 40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers 40%
Swedish Side, End and Diagonal Cutting Pliers 50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40%

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels ..... 30@30&10%
Chapin's Imp. Brass Cur. ..... 40@40&10%
Pocket Levels ..... 30@30&10%
Extension Slide ..... 30@30&10%
Machinists' Levels ..... 40@40&10%
Disston & Sons:
Shafting Levels ..... 60&10%
Pocket Levels ..... 60&10%
Plumbs and Levels ..... 60&10%
Track Level and Gauge ..... 60&10%
Woods' Extension 33⅓%

Points, Glaziers'—
Bulk and 1-lb. papers ..... lb. 9¢
¼-lb. papers ..... lb. 9½¢
⅛-lb. papers ..... lb. 10¢

Police Goods—
Manufacturers' Lists ..... 33@33&5%
Tower's 25%

Polish—Metal, Etc—
Ladd Co.:
Putzade Liquid, ₱ gro., ⅛ pts., $12.00; 1 pts., $20.00; 1 qts., $40.00; ₱ doz. ½ gals., $6.25; 1 gals., $12.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $5.00..40%
Prestoline Paste 40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz. 50¢; ½ gro., $4.50; ½ lb boxes, ₱ doz., $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75.

Stove—
Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $8.00
Black Kid Paste, 5 lb can...each, $0.65
Ladd's Black Beauty Liquid, per 100 tins $6.75
Joseph Dixon, ₱ gr. $5.75 ..... 10%
Dixon's Plumbago ..... ₱ lb 8¢
Fireside ..... ₱ gr. $2.50
Gem, ₱ gr. $4.50 ..... 10%
Japanese ..... ₱ gr. $3.60
Jet Black ..... ₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.80

Window Polish—
Benj. P. Forbes:
Glasbright, No. 2, gal pails, ₱ doz., $24.00; each, $2.50; 1 lb cans, each ..... 75¢
Glasbright Powder, bbls., ₱ lb..20¢

Poppers, Corn—
1 qt. Square..doz.$0.80; gro.$8.75
1 qt. Round..doz.$0.90; gro.$10.00
1½ qt. Square.doz.$1.20; gro..$12.00
2 qt. Square..doz.$1.50; gro..$15.00

Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

Posts, Steel—
Steel Fence Posts, each, 6 ft., 46¢; 6½ ft., 48¢; 7 ft., 50¢.
Steel Hitching Posts ..... each $1.30

Potato Parers—
See *Parers, Potato.*

Pots, Glue—
Enameled 40%
Tinned ..... 30&10%

Powder—
Black Sporting:
Kegs (25 lb.)..$5.00@5.50
Half Kegs (12½ lb.)..$2.75@3.00
Quarter Kegs (6¼ lb.)..$1.50@1.65
Canisters, pounds... .25
Canisters, ½ pounds. .15
Canisters, ¼ pounds. .12
Discount to the trade, 10%.
NOTE.—Prices vary according to territory.
King's Semi-Smokeless:
Keg (25 lb bulk) $6.50
Half Keg (12½ lb bulk) $3.50
Quarter Keg (6¼ lb bulk) $1.90
Case 24 (1 lb cans bulk) $8.50
Half case (1 lb cans bulk) $4.50

King's Smokeless:	Shot Gun.	Rifle.
Keg (25 lb bulk)	$12.00	$15.00
Half Keg (12½ lb bulk)..	6.25	7.75
Quarter Keg (6¼ lb bulk)	3.25	4.00
Case 24 (1 lb cans bulk)..	14.00	17.00
Half case 12 (1 lb c. bk)..	7.25	8.75

Presses—
Fruit, Wine and Jelly—
Enterprise Mfg. Co. ..... 20@25%

Seal Presses—
Morrill's No. 1, ₱ doz., $20.00 ..... 50%

Pruning Hooks and Shears
See *Shears.*

Pullers, Nail, Etc.—
Cyclops 50%
Elmore Tool Mfg. Co.:
Drop Forged Tack Pullers 10%
Nail Pullers 40%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00 ..... 50%
Pearson No. 1, Cyclone Spike Puller, each $30.00 ..... 50%
The Scranton Co. Case Lots:
No. 2B (large) $3.50
No. 3B (small) $5.00
Smith & Hemenway Co.:
Diamond B 70%
Giant 50%
Staple Pullers, Utica and Davison 60%
Taylor Mfg. Co., Sampson Tack, ₱ doz. $0.40

Pulleys, Single Wheel—

Inch	1½	1¾	2	3
Awning or Tackle, doz.	$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye, doz., ½ in., $1.25; 5 in., $1.55				
Inch	2	2¼	2½	
Hot House, doz...	$0.65	.85	1.20	
Inch	1¼	1½	1¾	2
Screw, doz....	$0.16	.19	.25	.30
Inch	1¾	2	2¼	2½
Side, doz.....	$0.25	.40	.55	.60
Inch	1½	1¾	2	2½

Sash Pulleys—
Common Frame; Square or Round End, per doz., 1¾ and 2 in. ..... 17@20¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in.. .20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 20½¢
American Pulley Co.:
Wrought Steel American Plain Axle ..... 50&10%
Wrought Steel, Eagle, ₱ doz., 1¾ in., 17¢; 2 in., 20¢; 2¼ in. ..... 27¢
Top Notch, Electrically Welded, Nos. 3 and 4, ₱ doz. ..... 19¢
Common Sense ..... ₱ doz. 20¢
Merit, ₱ doz., 2¼ in. ..... 37¢
Fox-All-Steel, Nos. 3 and 7, 2 in.. ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in. ..... 20½¢
No. 26 Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26....1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks.

Pumps—
Cistern 60%
Pitcher Spout ..... 75&10&5@80
Wood Pumps, Tubing, &c. 50%
Barnes Mfg. Co.:
Dbl. Acting (low list) 50%
Pitcher Spout 80%
Contractors' Rubber Diaphragm, No. 2, B. & L. Block Co. $16.00
Daisy Spray Pump ..... ₱ doz. $6.50
Flint & Walling Mfg. Co.:
Fast Mail Hand and Fast Mail (low list) ..... 50&5%
Tight Top Pitcher 80%
Goulds Mfg. Co.:
Double-Acting Thresher Tank.. $5.00
Diaphragm No. 3, Side Suction.$14.50
Empire, Advance, Seneca, D, A, Shallow and Deep Well (low list) 50%
Spraying and Whitewashing.....$2.45
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50 ..... 30%
F. E. Myers & Bros.:
Pumps (low list), Power Pumps, Spray Pumps 50%

Pump Leathers—
Plunger and Valve Leathers—Per gro.:

No.....	1	2	3	4	
	$5.00	6.00	7.00	8.00	30@30&5%
Cup Leathers—Per 100:					
Inch....	2½	3	3½	4	
	$5.00	7.00	9.00	12.00	

Punches—
Saddlers' or Drive, good, doz. ..... 50@75¢
Spring, single tube, good quality $1.75
Revolving (4 tubes)....doz. $3.50
Bemis & Call Co.'s Cast St'l Drive.50%
Elmore Tool Mfg. Co.:
Machinists' Center 40%
Tinners': Solid, 50%; Prick 50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00 ..... 50%
Hercules, 1 die, each $5.00 ..... 50%
Niagara Hollow Punches 40%
Niagara Solid Punches ..... 55&10%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44 ..... 40&10%

Rail—Barn Door, &c.—
Sliding Door, Painted Iron, 2½@2¾¢
Sliding Door, Wrought Brass, 1½ in., lb., 36¢ 50%
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail ..... 2¾¢
Griffin's:
XXX, ₱ 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, ₱ 100 ft. $3.45
O. N. T., ₱ 100 ft., 1 in., $3.12½; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in. ..... ₱ 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., ₱ 100 ft., $7.50; 1¼ x 3-16 in., $8.75 ..... 55&7½%
Trolley, No. 301, ₱ ft. ..... 9¢
McKinney's:
Hinged Hanger Track, ₱ ft., 11¢ ..... 60&5%
1 x 3-16 Track ..... 55&7½%
Myers' Stayon Track ..... 60&5%
Richards Mfg. Co.:
Common, 1 x 3-16 in., $3.00; 1¼ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail..60&10%
Lag Screw Rail, No. 65 ..... 50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 11¢; No. 33, 20¢.
No. 50 ..... 60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

Rakes—
NOTE.—Many goods are sold at net prices.
American Fork & Hoe Co.:
Lawn, ₱ doz., No. 24, $2.50; No. 29 ..... $2.25
Cronk's:
Steel Garden; Champion, ₱ doz., 12-tooth, $3.75; 14-tooth, $4.00; 16-tooth, $4.25; Ideal, ₱ doz., 12-tooth, $3.00; 14-tooth, $3.30; 16-tooth, $3.60.
Victor, 12-tooth, $2.25; 14-tooth, $2.50; 16-tooth, $2.75.
Queen City Lawn, ₱ doz., 20 teeth, $2.85; 24, $3.00 ..... net
Anticlog Lawn, ₱ doz. $4.00
Malleable Garden ..... 70&10%
Ideal Steel Garden, ₱ doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00 ..... 80%
Kohler's:
Jumbo Lawn, 36-tooth.... ₱ doz. $5.00
Lawn Queen, 20-tooth.... ₱ doz. $2.85
Lawn Queen, 24-tooth.... ₱ doz. $3.00
Paragon, 20-tooth ..... ₱ doz. $2.65
Paragon, 24-tooth ..... ₱ doz. $2.75
Steel Garden, 14-tooth.... ₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00

Rasps, Horse—
Disston's 75%
Heller Bros. ..... 70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard..... 60&10&5%
New Nicholson ..... 70&10@75%
See also Files.

Razors—
John Engstrom Swedish 50%
Sharp Shaver 60%
Fox Razors, ₱ doz., No. 42, $24.00; No. 44, $20.00; No. 62, Platina, $36.00. } 33⅓%

Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber Populo, Nickeled Populo 25%
Aluminum, German Silv., Bronze..25%
1210 N, 124 N 20%
3004 N, 06 N, 6 RM, G 9 ..... 25%
4 N, 6 PN, 24 N, 26 PN 30%
2904 P, 33⅓%; 2904 PN., 33⅓%; 0024 N, 33⅓%; 92084 N, 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%; 986 PN, 2904 N, 974 PN 25%
5009 PN, 5009 N 20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR 20%
304 P, 304 PN, 00304 P, 00304 PN..33⅓%

Registers—*List July 1, 1903.*
Japanned, Electroplated and Bronzed 70%
White Porcelain Enamel.. 50&10%
Solid Brass or Bronze Metal.. 40%

Revolvers—
Single Action ..... 95¢@$1.00
Double Action, except 44 cal. $2.00
Double Action, 44 caliber... $2.00
Automatic $4.00
Hammerless $4.50

Riddles, Hardware Grade
16 in.....per doz. $2.50@$2.75
17 in.....per doz. $2.75@$3.00
18 in.....per doz. $3.00@$3.25

Rings and Ringers—
Bull Rings—

	2	2½	3 inch.
Steel	$0.70	0.75	0.80 doz.
Copper	$1.10	1.25	1.35 doz.

Hog Rings and Ringers—
Hill's Rings, per gro. boxes, $4.60@$4.75; per doz. boxes, 40@45¢
Hill's Ringers, Gray Iron, doz., 55@65¢
Hill's Ringers, Malleable Iron, doz. 85@95¢
Blair's Rings..per gro.$5.50@$6.00
Blair's Ringers..per doz.65@70¢

Rivets—
Copper Rivets and Burrs, 50@50&10%
Tinners' and Miscellaneous Rivets ..... 80@80&10%

Bifurcated and Tubular—
Assorted in Pasteboard Boxes.
Bifurcated, per dozen boxes, 50 count; 40@45¢; 100 count, 50@63¢.
Tubular, per doz. boxes, 50 count, 60@63¢; 100 count, $1.12@$1.26.

Rollers—
Cronk's Stay, No. 50 ..... $1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60 ..... $0.75
Lane's Stay 40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57 ..... 50%
Underwriters', Nos. 59, 60 ..... 50%
Favorite, No. 54 ..... 60%

Rope—
Manila, 7-16 in. diam. and larger: Highest Grade..... lb. 8¼@8½¢
Lower Grades.
Sisal, 7-16 in. diam. and larger: Highest Grade..... lb. 7½@7¾¢
Second Grade..... lb. 6½¢
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Pure ..... lb. 7¾@8¢
Sisal, Tarred, Medium Lath Yarn: Pure ..... lb. 6¾@7¢
Cotton Rope: Best, ¼-in. and larger. 16½@18¢
Medium, ¼-in. and larger. 15@16¢
Common, ¼-in. and larger.. 13½¢
In coils, ½¢ advance.
Jute Rope: Thread, No. 1, ¼-in. and up, lb. ..... 6½@6¾¢
Thread, No. 2, ¼-in. and up, lb. ..... 5¼@5¾¢

Wire Rope—
Galvanized ..... 47½&42½%
Plain ..... 55&42½%

Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal 20%

Rules
Boxwood ..... 60&5%
Ivory ..... 25&5%
Chapin-Stephens Co.:
Boxwood 60%
Flexifold 60%
Ivory ..... 25@25&10%
Miscellaneous ..... 50@50&10%
Stephens' Combination 55%
Stationers' ..... 50@50&10%
Keuffel & Esser Co.:
Folding, Wood ..... 35&10%
Folding, Steel ..... 33⅓&10%
Lufkin's Steel ..... 50&10%
Lufkin's Lumber ..... 50&10%
Upson Nut Co.:
Boxwood ..... 60@60&10%
Ivory ..... 35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—

Atkins':
Circular 45%
Band ..... 50@50&10%
Butcher Saws 50%
Cross Cuts 35%
One-Man Cross Cut 40%
Narrow Cross Cut 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass 40%
Mulay, Mill and Drag 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames ..... 30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws ..... 30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth 50%
Band, 2 to 18 in. wide 60%
Band, ¾ to 1¾ 60%
Crosscuts 45%
Narrow Crosscuts 50%
Mulay, Mill and Drag 40%
Framed Woodsaws 25%
Woodsaw Blades 25%
Woodsaw Rods, Tinned 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 5, 1, 0, 00, Combination 30%
Compass, Key Hole, &c. 25%
Hand Ice Saws 45%
Butcher Saws and Blades 30%
C. E. Jennings & Co.'s:
Back Saws 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws, 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws 30%
Simonds':
Circular Saws 45%
Crescent Ground Cross Cut Saws 30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws 45%
Band Saws 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand 45%
Compass, Key Hole, &c. ..... 25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A 25%
Disston's:
Concave Blades 25%
Chromol Blades 35%
Hack Saw Frames 30%
Simonds, 25%; The Best, 35%; Culley 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete ..... 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames ..... 35&5&10%
Griffin's Hack Saw Blades ..... 35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades ..... 30&10&5%
Sterling Hack Saw Frames ..... 30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00 ..... 10%
Victor Hack Saw Blades 20%
Victor Hack Saw Frames 40%
Whitaker Mfg. Co.:
National Hand Blades, Hand Frames, Power Blades 40%

Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00 ..... 15&10%

Scales—

Union Platform, Plain ..... $2.10@2.80
Union Platform, Stpd ..... $2.30@2.80
Chatillon's:
Eureka 25%
Favorite 40%
Grocers' Trip Scales 50%
The Standard Portables 40%
The Standard R. R. and Wag- 50%

Scrapers—

Box, 1 Handle ..... doz. $1.85@2.10
Box, 2 Handle ..... doz. $2.35@2.50
Ship ... Light, $2.00; Heavy, $1.50
Chapin-Stephens Co., Box ..... 30@30&10%
Richards Mfg. Co., Foot 60%

Screws—Bench and Hand

Bench, Iron, doz., 1 in., $2.50@2.75; 1¼, $3.00@3.25; 1½, $3.50@3.75
Bench, Wood ..... 20@20&10%
Hand, Wood ..... 70&10@70&10&10%
Chapin-Stephens Co., Hand ..... 70@70&10&2½%

Coach, Lag and Hand Rail—

Lag, Cone Point ..... 80&10%
Coach, Gimlet Point ..... 80&5%
Hand Rail ..... 70&10@75%

Jack Screws—

Standard List ..... 70&10@75%
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

Machine—

Cut Tread, Iron, Brass or Bronze:
Flat Head or Round Head, ... 50@50&10%
Fillister Head ..... 40@40&10%
Rolled Thread, F. H. or R. H., Iron ..... 75&10%
F. H. or R. H., Brass, Nos. 8 to 14 ..... 65&10%

Set and Cap—

Set (Iron) ..... 75&10&7½%
Set (Steel), net advance over Iron 25%
Sq. Hd. Cap ..... 70&10&7½%
Hex. Hd. Cap ..... 70&10&7½%
Rd. Hd. Cap ..... 50&7½%
Fillister Hd. Cap ..... 60&7½%

Wood—
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Flat Head, Iron ..... 87½&5@..%
Round Head, Iron ..... 85&5@..%
Flat Head, Brass ..... 80&5@..%
Round Head, Brass ..... 77½&5@..%
Flat Head, Bronze ..... 75&5@..%
Round Head, Bronze ..... 72½&5@..%
Drive Screws ..... 87½&5@..%

Scroll Saws—
See *Saws, Scroll.*

Scythes— *Per doz.*

Plain Grass, Cutting Edge Polished ..... $6.25@6.50
Clipper, Bronzed Web ..... $6.50@6.75
Solid Steel, Web and Backs Polished ..... $7.00@7.25
Bush, Weed and Bramble, Painted ..... $6.50@6.75
Grain, Painted, Cutting Edge Polished ..... $8.25@8.50
Clipper Grain, Bronze Web, ... $8.50@8.75

Seeders, Raisin—

Enterprise ..... 25@30%

Sets— Awl and Tool—

Fray's Tool Handles, Nos. 1, $12; 2, $16; 3, $12 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

Garden Tool Sets—

American Fork & Hoe Co.:
Rake, Shovel and Hoe, ₰ doz. sets, No. 3 P F $7.25

Sets, Nail—

Octagon ..... gro. $3.50@3.75
Buck Bros. 37½%
Elmore Tool Mfg. Co. 30%
Mayhew's ..... ₰ gro. $3.00
Snell's Corrugated, Cup Pt. ..... 40&10%
Snell's Knurled, Cup Pt. ..... 40&10%
Victor Knurled, Cup Pt. ..... ₰ gro. $7.50

Rivet—

Regular list ..... 75@75&10%

Saw—

Atkin's:
Criterion 40%
Adjustable 40%
Disston's Star, Monarch and Triumph 30%
Giant Royal Cross Cut ..... ₰ doz. $7.50
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut $20.60
No. 5, Mill $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style $10.00
Special $16.25
Royal, Hand ..... ₰ doz. $4.50
Seymour Smith & Son's 65%
Taintor Positive ..... ₰ doz. $6.75

Shaving—

Fox Shaving Sets, No. 30 ..... ₰ doz., net, $24.00
Smith & Hemenway Co.'s 75%

Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ₰ doz. $1.50
Mounted Kitchen Sand Stone, ₰ doz. $1.50
Natural Grit Carving Knife Hones, ₰ doz. $3.00
Quick Cut Emery Carving Knife Hones, ₰ doz. $1.50
Quick Edge Pocket Knife Hones, ₰ doz. $2.50
} 50%

Skate—

Smith & Hemenway Co., Eureka 50%

Shaves, Spoke—

Iron ..... doz. $1.25
Wood ..... doz. $2.00
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ₰ doz. $9.00 ..... 15&10%
Seymour Smith & Son's 50%

Shears—

	Cast Iron..	7	8	9 in.
	Best ...	*$16.00*	*18.00*	*20.00 gro.*
	Good ...	*$13.00*	*15.00*	*17.00 gro.*
	Cheap ..	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap ..... 70&10&5%
Best Quality Nickel ..... 60&10&5%
Tailors' Shears ..... 40@40&10%
Acme Cast Shears ..... 40@40&5%
Columbian Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
W. H. Compton Shear Co.:
Japan Handles, Nickel Blades ..... 60&10&5%
Full Nickel ..... 50&10&5%
Heinisch's Tailor's Shears 10%
National Cutlery Co.'s Nickel Plated, 60&10%; Japan Handles ..... 70&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' 25%

Tinners' Snips—

Steel Blades ..... 20&5@20&10%
Steel Laid Blades ..... 50&10%
Acme Cast Snips ..... 40@45&5%
W. H. Compton Shear Co., Forged Steel Handles 35%
Forged Handles, Steel Blades, Berlin 50%
Heinisch's Snips 40%
Jennings & Griffin Mfg. Co.'s 6½ to 10 in. ..... 33⅓&7½%
National Cutlery Co.'s Forged Steel 50%
Niagara Snips 40%
P., S. & W. Forged Handles, 25%; W. R. W. 50%
J. Wiss & Sons Co.:
Wiss Forged Steel 25%

Pruning Shears—

Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand, ... 60&10%
W. H. Compton Shear Co., Dropped Forged Steel 35%
Cronk's Hand Shears 33⅓%
Cronk's Wood Handle Shears 33⅓%
Disston's Combined Pruning Hook and Saw, ₰ doz. $18.00 ..... 25%
Disston's Pruning Hook only, ₰ doz., $12.00 ..... 25%
J. T. Henry Mfg. Co.:
Pruning Shears, all grades 40%
P., S. & W. Co. ..... 40&10%
Seymour Smith & Son's:
Hand Shears 70%
Standard Tree Pruners ..... 75&10%
Wood Handle Pruning Shears 40%

Sheaves— Sliding Door—

Reading 40%
R. & E. list 15%

Sliding Shutter—

Reading list 40%
R. & E. list 15%

Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 60&5%
Club, Rival, 65&5%; First Quality, ... 60&5%

Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge, ... 25&10%
Climax, 10 and 12 gauge; Acme and Magic, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade ..... 25&5%
Union, League, 10 and 12 gauge, Rival Grade 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge 20%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade 20%

Shells, Loaded—

Loaded with Black Powder 40%
Loaded with Smokeless Powder, medium grade ..... 40&5%
Loaded with Smokeless Powder, high grade ..... 40&10&10%
Union Metallic Cartridge Co.:
New Club, Black Powders 40%
Nitro Club, Smokeless Powders ..... 40&5%
Arrow, Smokeless Powders ..... 40&10&10%
Winchester:
Smokeless Repeater Grade ..... 40&5%
Smokeless Leader Grade ..... 40&10&10%
Black Powder 40%

Shingles, Metal— Per Sq.

Edwards Mfg. Co.:	Painted.	Galv.
14 x 20	$4.25	$6.00
10 x 14	4.50	6.25
7 x 10	4.75	6.50

Wheeling Corrugating Co.:

Dixie, 14 x 20 in.	$4.05	$5.05
Dixie, 10 x 14 in.	4.25	5.45
Dixie, 7 x 10 in.	5.25	6.70

Shoes, Horse, Mule, &c.—

F.o.b. Pittsburgh:
Iron ..... per keg. $4.10
Steel ..... per keg. $3.85
Burden's, all sizes ..... ₰ keg $3.90

Shot—

25-lb. bag.
Drop, up to B $1.70
Drop, B and larger 1.95
Buck 1.95
Chilled 1.95
Dust 2.30

Shovels and Spades—

Association List ..... 40&7½%@40&10%
Avery Stamping Co. 40%

Snow Shovels—

Long Handle ..... $2.50@2.75
Wood and Mall, D Handle, ... $2.65@2.90

Sieves and Sifters—

Hunter's Imitation, gro $9.50
Hunter's Genuine, per gro $12.00

Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₰ doz. $39.00

Sieves, Seamless Metallic

	Per dozen.			
Mesh 1½	*16*	*18*	*20*
Iron Wire $1.05	*1.05*	*1.10*	*1.20*
Tinned Wire $1.15	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.

Mesh 18, Nested ..... doz. $0.90@0.95
Mesh 20, Nested ..... doz. $1.00@1.05
Mesh 24, Nested ..... doz. $1.30@1.40

Sinks, Cast Iron—

Painted, Standard list:
12 x 12 to 22 x 36 in. 60%
20 x 24 to 24 x 50 in. 50%
24 x 60 to 24 x 120 in. 30%
Barnes' low list 60%

NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—

Cast Iron ..... 70@70&10%
Steel ..... 35@40%

Slates, School—

Factory Shipments.

"D" Slates ..... 50@50&10%
Eureka, Unexcelled Noiseless .. 60&7 tens.
Victor A, Noiseless .. 60&4 tens 45%

Slaw Cutters—See *Cutters.*

Snaps, Harness—

German ..... 40@40&10%
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan 40%
Jockey 25%

Snaths—

Grass Scythe ..... 50@50&5%

Snips, Tinners—See *Shears.*

Spoons and Forks—

Silver Plated—

Good Quality ..... 50&10@60&5%
Cheap ..... 60@60&10%
International Silver Co:
1847 Rogers Bros. ..... 40&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand 60%
Wm. Rogers & Son ..... 60&10%

Miscellaneous

German Silver ..... 60@60&5%

Tinned Iron—

Teas ..... per gro. 50@55¢
Tables ..... per gro. $0.90@$1.00
Atlas Mfg. Co.:
Tea Spoons, ₰ gro. ..... 50¢@55¢
Table Spoons, ₰ gro. ..... $0.90@$1.00

Springs— Door—

Bardsley's Spring and Check 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) 20%
Pullman Door and Gate 10%
Reliance (Coil) ..... 40&10%
Star (Coil) 35%
Torrey's Rod, 39 in. ..... ₰ doz. $1.00

Carriage, Wagon, &c.—

1¼ in. and Wider: Per 100 lb.
Black ..... $4.75@$5.00
Half Bright ..... $4.75@$5.00
Bright ..... $5.25@$5.50
Painted Seat Springs:
1½ x 2 x 26 .... per pair. 45@47¢
1½ x 3 x 28 .... per pair. 68@71¢

Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ₰ doz. $12.00
Enterprise ..... 25@30%
Hero Fruit Jar Co., ₰ doz. $4.50
Philadelphia No. 1, ₰ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

Squares—

Nickel plated .. List Jan. 5, 1900.
Steel and Iron .. 80@—%
Rosewood Hdl. Try Square and T-Bevels ..... 60&10&10@70%
Iron Hdl. Try Squares and T-Bevels ..... 40&10@40&10&10%
Disston's Try Squares and Bevels, ... 60&10%

Squeezers, Lemon

Wood, Porcelain Lined:
Cheap ..... doz. $1.00
Good Grade ..... doz. $1.25
Tinned Iron ..... doz. $0.75@1.00
Iron, Porcelain Lined ... doz. $1.75
Victor, ₰ gro. $9.00

Staples—

Barbed Blind ..... 85&5@85&10%
Electricians' ..... 80&10&10@85%
Fence Staples, Polished, $1.70; Galvanized $2.00
Poultry Netting Staples ..... per lb. 3½@3½¢

Steels, Butchers'—

Dick's 30%
Foster Bros. 30%

Steelyards— ..... 30@30&10%

Stocks and Dies—

Blacksmiths' ..... 50@50&10%
Curtis Rev'bie Ratchet Die Stock 25%
Derby Screw Plates 25%
Green River 25%
Lightning Screw Plate 25%
Little Giant 25%
Reece's New Screw Plate 25%

Stoners, Cherry—

Enterprise ..... 25@30%

Stones, Axe—

Pike Mfg. Co., Axe Stones (all kinds) 33⅓%

Glass Cutters' Stones—

Pike Mfg. Co., Glass Cutters' Stones and Supplies 40%

Stones, Oil, &c.—

Pike Mfg. Co., 1907 list: ₰ lb.
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in. 60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
} 25%

India Oil Stones (entire list) 33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit 40%
Quickcut Emery and Corundum Axe Stone, Double Grit 33⅓%
Quickcut Emery Rubbing Bricks 40%
Hindostan No. 1, R'g'lar, ₰ lb. 8¢
Hindostan No. 1, Small .. ₰ lb. 10¢
Turkey Oil Stones, Extra, 5 to 8 in. ..... ₰ lb. 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 15¢
Sand Stone ..... 6¢
} 25%

Scythe Stones—

Pike Mfg. Co., 1907 list:
Black Diamond S. S. ℔ gro. $12.00
Lamoille S. S. ℔ gro. $11.00
White Mountain S. S. ℔ gro. $9.50
Green Mountain S. S. ℔ gro. $7.00
Extra Indian Pond S. S. ℔ gro. $8.00
No. 1 Indian Pond S. S. ℔ gro. $7.50
No. 2 Indian Pond S. S. ℔ gro. $5.00
Leader Red End S. S. ℔ gro. $5.00
Quick Cut Emery... ℔ gro. $10.00
Pure Corundum..... ℔ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat. $8.80
Emery Scythe Rifles, 3 Coat. $11.00
Emery Scythe Rifles, 4 Coat. $13.20
} 33⅓%
Balance of 1907 list 33⅓%.
Lectro (Artificial), ℔ gro., $12.00 33⅓%
$12.00 ..... 33⅓%
Lightning (Artificial), ℔ gro., $18.00 ..... 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers..... ℔ gro. $9.00

Stops— Bench—

Millers Falls..... 15&10%
Morrill's, ℔ doz., No. 1, $10.00.... 50%
Morrill's, No. 2, $12.50..... 50%
Seymour Smith & Son's..... 40%

Door—

Chapin-Stephens Co..... 50@50&10%

Plane—

Chapin-Stevens Co..... 20%

Straps— Box—

Acme Embossed, case lots.. 20&10&10%
Cary's Universal, case lots... 20&10&10%

Stretchers, Carpet—

Cast Iron, Steel Points..dox. 55¢
All Steel Socket...dox. $2.00@2.25
Excelsior Stretcher and Tack Hammer Combined, ℔ doz., $6.00.... 20%

Stuffers, Sausage—

Enterprise Mfg. Co., Stuffers and Lard Presses..... 25@25&7½%
National Specialty Co., list Jan. 1, 1902 ..... 30&5%
P., S. & W. Co..... 40&10&5%

Sweepers, Carpet—

Goshen Sweeper Co.:	Per doz.
Gilt Edge	$27.00
Superfine	26.00
Majestic	24.00
Select, Nickeled	22.00

National Sweeper Co.:
National Queen, Nickeled..... $27.00
Martha Washington, Nickeled.. 25.00
Monarch, Japanned..... 20.00
Perpetual, Japanned..... 18.00
Streator Metal Stamping Co.:
Model E, Sanitaire..... $25.00
Eureka 15.00
Streator Majestic, Nickeled..... 24.00
Streator Conqueror, Japanned.. 22.00

NOTE.—Leading Manufacturers give the following rebates from list prices: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten dozen lots.

Tacks, Finishing Nails, &c.

American Carpet Tacks. 90&25@—%
American Cut Tacks.. 90&25@—%
Swedes' Cut Tacks.L.. 90&30@—%
Swedes' Upholsterers'. 90&35@—%
Gimp Tacks..... 90&35@—%
Lace Tacks..... 90&35@—%
Trimmers' Tacks..... 90&30@—%
Looking Glass Tacks..... 65@—%
Bill Posters' and Railroad Tacks, 90&10@—%
Hungarian Nails..... 80@—%
Finishing Nails..... 70@—%
Trunk and Clout Nails. 75&5@—%
NOTE.—The above prices are for Straight Weights.

Miscellaneous—

Double Pointed Tacks, 90&6 tens@—%
See also Nails, Wire.

Tanks, Oil and Gasoline—

Wilson & Friend Co.:

Gal.	Gasoline	Oil
50	$2.75	$3.00
60	$3.50	$4.00
110	$5.00	$5.75

Tapes, Measuring—

American Asses' Skin.... 50@—%
Patent Leather..... 25@30&5%
Steel ..... 35⅓&5%
Chesterman's ..... 25@35&5%
Keuffel & Esser Co.:
Favorite, Ass Skin..... 40&10@50%
Favorite, Duck and Leather..... 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkins:
Asses' Skin..... 40&10@50%
Metallic ..... 30@30&5%
Patent Bend, Leather... 25&5@25&10%
Pocket ..... 40@40&5%
Steel ..... 33⅓@33%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ¾-inch and larger per 100 lb..... $2.55@$2.80

Thermometers—

Tin Case, Cabinet, Flange, Dairy, &c..... 30@35%

Ties, Bale—Steel Wire—

Single Loop..... 82½&10%
Monitor, Cross Head, &c. 70&8½%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White..... 20@20&5%

Haying—

Myers' Hay Tools..... 50%

Ice Tools—

Gifford-Wood Co..... 15%

Miniature—

Smith & Hemenway Co.'s, Davidson, ℔ doz., Nickel Plated, $1.50; Gold Plated..... $2.00

Saw—

Atkins' Cross Cut Saw Tools.... 35&5%
Simond's Improved..... 33⅓%
Simonds' Crescent..... 30%

Ship—

L. & I. J. White..... 25%

Torches—

Hammers, Engine, ℔ doz..... $1.50

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz., $1.15@$1.25; gro.... $11.50@12.00
Harper, Champion or Paragon, doz., $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida..... 75@10%
Newhouse ..... 50&5%
Hawley & Norton..... 65&10%
Victor ..... 75@75&10%
Oneida Community Jump..... 70&5%
Stop Thief..... 60%
Tree Trap..... 60%
Hector ..... 75@75&10%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes, 12¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine), ℔ doz.:

	Crate lots.	Small lots.
No. 1, Rat.....	$11.50	$14.50
No. 3, Rat.....	$5.75	$6.50
No. 3½, Rat.....	$4.70	$5.25
No. 5, Mouse.....	$2.25	$3.00

Animal Trap Co.:
Out o' Sight, Mouse, ℔ doz..... $0.60
Out o' Sight, Rat, ℔ doz..... 1.20
Easy Set, Mouse, ℔ doz..... .35
Easy Set, Rat, ℔ doz..... .85
Out o' Sight Chockers, ℔ doz. holes ..... .12
Out o' Sight, Tin, 5-hole, ℔ doz. traps ..... .75

Trowels—

Disston Brick and Pointing..... 25%
Disston Plastering..... 20%
Disston "Standard Brand" and Garden Trowels..... 30%
Kohler's Steel Garden Trowels, ℔ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break, Forged Steel Garden Trowels, in bulk, net ℔ gro. $5.50
In 1 doz. boxes..... ℔ gro. $6.00
Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern..... 50&10%
Western Pattern..... 60&10%
Handy Trucks..... ℔ doz. $16.00
Grocery ..... ℔ doz $15.00
McKinney Trucks..... each, net $10.00
Model Stove Trucks..... ℔ doz $18.50

Tubs, Wash—

No.	0	1	2	3

M'fr's list, price per gross, subject to discount of 10&7½&5&5 &10&5%.
Galvanized..... $67 $79 $91 $103

Twine, Miscellaneous—

Flax Twine:
No. 9, ¼ and ½-lb. Balls. 21@23¢
No. 12, ¼ and ½-lb. Balls. 19@21¢
No. 18, ¼ and ½-lb. Balls. 16@18¢
No. 24, ¼ and ½ -lb. Balls. 15½@17½¢
No. 36, ¼ and ½-lb. Balls. 15@17¢
Chalk Line, Cotton ½-lb. Balls ..... 24@29¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz..... 8½@19¢
Cotton Wrapping, 5 Balls to lb., according to quality.. 13½@19¢
American 2-Ply Hemp, ¼ and ½-lb. Balls..... 18½@18¢
American 3-Ply Hemp, 1-lb Balls ..... 18½@16¢
India, 2-Ply Hemp, 1½-lb. Balls, Balls (Spring Twine)... 7½@9¢
India 3-Ply Hemp, 1-lb. Balls 7½@9¢
India 2-Ply Hemp, 1½-lb. Balls, 7@8½¢
2, 3, 4 and 5-Ply Jute, 1½-lb. Balls ..... 5@11¢
Mason Line, Linen, ½-lb. Bls. 17¢
No. 264 Mattress, ¼ and ½ lb. Balls, according to quality. 30@60¢
Wool, 3 to 6 ply....B 6¢; A 7½¢

Vises—

Solid Box..... 60@60&10%

Parallel—

Athol Machine Co.:
Simpson's Adjustable..... 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co., 40&5%; Slide 65%
Fisher & Norris Double Screw, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00; 6, $32.00..... 15&10%
Fisher-Brooks Bench Vises, No. 0, $3.60; No. 1, $5.50; No. 2, $8.25; No. 3, $10.50; No. 4, $13.50.... 15&10%
Fulton Mach. & Vise Co.:
F. & R. Double Swivel Machinists'..... 40%
Star, Solid Jaw, Machinists'..... 40%
Hollands':
Machinists' ..... 40@40&5%
Keystone ..... 65&5@70%
Lewis Tool Co.:
Adjustable Jaw..... 30%
Monarch, 50%; Solid Jaw..... 50%
Massey Vise Co.:
Clincher 40%
Parallel Bar..... 15%
Perfect, 15%; Lightning Grip..... 15%
Merrill's 25%
Millers Falls Oval Slide Pattern. 60&10%
Parker's:
Victor, 20@25%; Regulars.... 20@25%
Vulcan's ..... 40@45%
Combination Pipe..... 55@60%
Prentiss ..... 20@25%
Rock Island..... 25%
Snediker's X. L..... 33⅓%
Stephens' 33⅓%

Saw Filers

Disston's D 3 Clamp and Guide, ℔ doz., $24.00, 30%; Clamps..... 30%
Perfection Saw Clamps, ℔ doz.... $4.50
Reading 60%

Wood Workers—

Fulton Mach. & Vise Co.:
F. & R. Double Swivel Coachman's 40%
Star Solid Jaw Woodworkers'.... 60%
Massey Vise Co.:
Lightning Grip, 15%; Perfect.... 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Fulton Machine & Vise Co., Combination Pipe..... 70%
Holland's Combination Pipe.. 60@60&5%
Massey's Quick Action Pipe..... 40%
Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No. 870, 40%.
Rock Island Pipe..... 25%

Wads—*Price per M.*

B. E., 11 up..... 60¢
B. E., 9 and 10..... 70¢
B. E., 8..... 80¢
B. E., 7..... 80¢
P. E., 11 up..... $1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
} *Dis. 15%*
Ely's B. E., 11 and larger. $1.70@1.75
Ely's P. E., 12 to 20.... $3.00@3.25

Ware, Hollow—Cast Iron, Hollow—

Stove Hollow Ware:
Enameled ..... 45&10%
Ground ..... 50&5%
Plain or Unground..... 60%
Country Hollow Ware, per 100 lbs ..... $2.75@$3.00
White Enameled Ware:
Maslin Kettles..... 65&10%
Covered Wares:
Tinned and Turned..... 35&10%
Enameled ..... 45&10%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware..... 33⅓%
El-an-ge ..... 60&10%
Iron Clad Ware..... 70&10%
Lava and Volcanic, Enameled.. 40&10%

Tea Kettles—

Galvanized Tea Kettles:

Inch	6	7	8	9
Each	45¢	50¢	55¢	65¢

Steel Hollow Ware—

Avery Stamping Co.:
Never-Break Spiders and Griddles ..... 65&10%
Steel Kettles, Maslins Scotch Bowls, Tin'd..... 60%
Steel Stew Pans, Stew Pots, etc., Porcelained 50%
Cleveland Stamping & Tool Co.:
Solid Steel Spiders and Griddles ..... 65&5%
Solid Steel Kettles..... 60&5%

Warmers, Foot—

Pike Mfg. Co., Soapstone....40@40&10%

Washboards—

No.	℔ doz.
800—Brass King, Single Surface, Open Back	$2.80
862—White Hen, Spiral Grimp Glass	$3.35
964—Royal Blue Enamel, Single Surface, Ventilated Back	$3.35
172—Our Best, Single Zinc, Soap Drainer	$3.35
722—Soap Saver, Single Zinc, Iron Top	$3.35
100—Northern Queen, Single Zinc, Perforated, Open Back	$3.00
134—Universal, Single Zinc, Extra Family Size, Ventilated Back	$2.80
760—Banner Globe, Single Zinc, Ventilated Back	$2.25
57—Peerless, Double Zinc, Spring Protector	$3.70
56—Red Cross, Double Zinc, Swing Protector	$3.60
17—North Star, Solid Zinc, Swing Protector	$3.60
797—Jewel, Single Zinc, Pail Size.	$1.25
St. Louis Washboard Co. Ben Hur, Brass, Open Back	$2.50
Brass Key, Open Back	$2.75

Washers—Leather, Axle—

Solid ..... 90@90&10%
Patent ..... 90@90&5%
Coil: 7/8 *inch.* 9¢ | 1 *inch.* 10¢ | 1¼ *inch.* 11¢ | 1½ *inch per box.*

Iron or Steel—

Size bolt.... 5-16 ⅜ ½ ⅝ ¾
Washers.... $1.90 1.00 2.70 2.50 2.30
The above prices are based on $6.50 off list.

In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.
Avery Stamping Co.:
Standard, in 200 lb kegs, $6.00 ℔ 100 lb. discount; in 100 lb kegs, add 10¢ net ℔ 100 lb; in 5 or 10 lb boxes, add 50¢ net ℔ 100 lb; in 1 lb boxes, add $1.00 net ℔ 100 lb.

Cast Washers—

Over ½-inch, barrel lots, per lb. 1½@1¾¢

Wedges—

Oil Finish..... lb., 2¼@2¾¢

Weights—Hitching—

Covert Mfg. Co..... 30&2%

Sash—

Per net ton..... $22.50@—

Wheels, Corundum and Emery—

Pike Mfg. Co., Corundum, 65%; Emery 75%

Well—

8-in., $2.00; 10-in., $2.30; 12-in., $3.00; 14-in., $4.45.

Wire and Wire Goods—

Market and Stone Wire in Bundles—

Bright and Annealed:
9 and coarser..... 80%
10 to 18..... 80&10%
19 to 26..... 80&10&2½%
27 to 36..... 80&5%
Galvanized:
9 and coarser..... 75&10%
10 to 16..... 75&10%
17 to 26..... 72½&10%
27 to 36..... 72½%
Coppered:
9 and coarser..... 75&10%
10 to 26..... 75&10%
27 to 36..... 70&10&5%
Tinned:
6 to 18..... 75&10&10%
Brass..... 15¾¢ lb., base
Copper..... 14⅝/₁₀₀ lb., base
Cast Steel Wire..... 50%

Spooled Wire—

Annealed and Tinned, 70&10&10&10%
Brass and Copper... 60&10&10&10%
Retailers' Assortments, per box, $1.90@$2.10
Wire Clothes Line, See Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Steel Wire Goods..... 90&10%
Brass Wire Goods..... 90&10%
Brass Cup and Shoulder Hooks, 85%

Wire Cloth and Netting—

Galvanized Poultry Netting, 80&10@80&10&5%
Screen Cloth, 12 Mesh, Per 100 sq. ft.; Painted, $1.35; Galvanized, $1.95; 14 Mesh, Bronze $6.50.
Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, Per 100 sq. ft.
Nos. 2, 2½ and 3 Mesh.... $2.75
Nos. 4 and 5 Mesh..... $3.00
No. 6 Mesh..... $3.25
Nos. 7 and 8 Mesh..... $3.75

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural ..... 75&10%
Alligator or Crocodile. 70&10@75%
Baxter Pattern S Wrenches, 70&5@70&10%
Drop Forged S..... 45@45&5%
Acme ..... 60&10%
Alligator Pattern, 70%; Bull Dog..70%
Bemis & Call's:
Adjustable S, 40&5%; Adjustable S Pipe, 40&5%; Briggs Pattern, 40%; Combination Bright, 50%.
Steel Handle Nut..... 50&5%
Combination Black..... 50&5%
Merrick Pattern..... 50&5%
Boardman's 40%
Coes' Genuine Knife Hdl.. 40&10&5&5%
Coes' Genuine Steel Hdl.. 40&10&5&5%
Coes' Genuine Key Model.. 40&10&5&5%
Coes' Genuine Hammer Handle..... 40&10&5&5%
Coes' "Mechanics'".. 40&10&10&5&5%
Donohue's Engineer..... 40&10%
Eagle 70%
Gem Pocket..... 30%
Hercules 70%
W. & B. Machinist:
Case lots..... 50&10%
Less than case lots..... 50%
W. & B. Railroad Special:
Case lots..... 50%
Less than case lots..... 40&10&5%
Solid Handles, P., S. & W.. 50&10%; full cases..... 50&10&5%
Standard Nipple Mfg. Co.:
Duplex Chain..... 50%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle.... 40&10&5%
Other Wrenches..... 50%
Vulcan and Agrippa Chain..... 50%
Whitaker Machinists'..... 50&10%
Wizard Adjustable Ratchet..... 50%

Fruit Jar—

Benj. P. Forbes, Triumph, ℔ gro., $7.50; per doz..... $0.90

Wrought Goods—

Staple Hooks, &c., Hat March 17, '09..... 90@—%

Zinc— (*Cask lots at mill.*)

Sheet ..... per 100 lb., $7.00

For the Table of "Current Metal Prices" see the First Issue of Every Month.